VETERINARY MEDICINE

Forestry

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180 N. Michigan Ave.
Chicago, U. S. A.

Trichinella spirallis was recently identified in a silver fox.

According to reports tularemia has not been identified in any of the varieties of domestic rabbits.

It has been estimated that there is approximately $10,000,000.00 invested in small animal hospitals and equipment in this country.

Anaplasmosis, although primarily a disease of summer and early fall, does occur in cold weather. It is an easy matter to transmit the infecting anaplasmosa by means of surgical instruments and it is possible that some of the cases of anaplasmosis that have occurred in the winter time may have been due to contaminated instruments.

Approximately one-third of the cattle and one-fourth of the sheep slaughtered in eight different slaughter houses during 1925-26 in Bulgaria, were reported to be affected by echinococcosis. This condition is also relatively common in the human in Bulgaria as 66 cases were found in 8,653 autopsies in one hospital. —Bio. Abst.

The common warts in cattle, according to Creech of the Pathologic Division of the Bureau of Animal Industry, are probably caused by a filtrable virus. Experimental inoculation of a filtrate from bovine warts proved positive in about 50 per cent of the tests.

It is no use to attempt to guess the loss that Wisconsin dairymen sustain as a result of infectious abortion. It is infinitely greater than the tuberculosis loss ever was or could be. It is safe to say, however, that the production of all infected herds would be increased 20 per cent by the elimination of contagious abortion.—C. L. Hill, Chairman, Commissioners of Agriculture and Markets. Madison, Wisconsin.

Abortion in goats due to insufficient food is relatively prevalent following protracted drouths on some range.

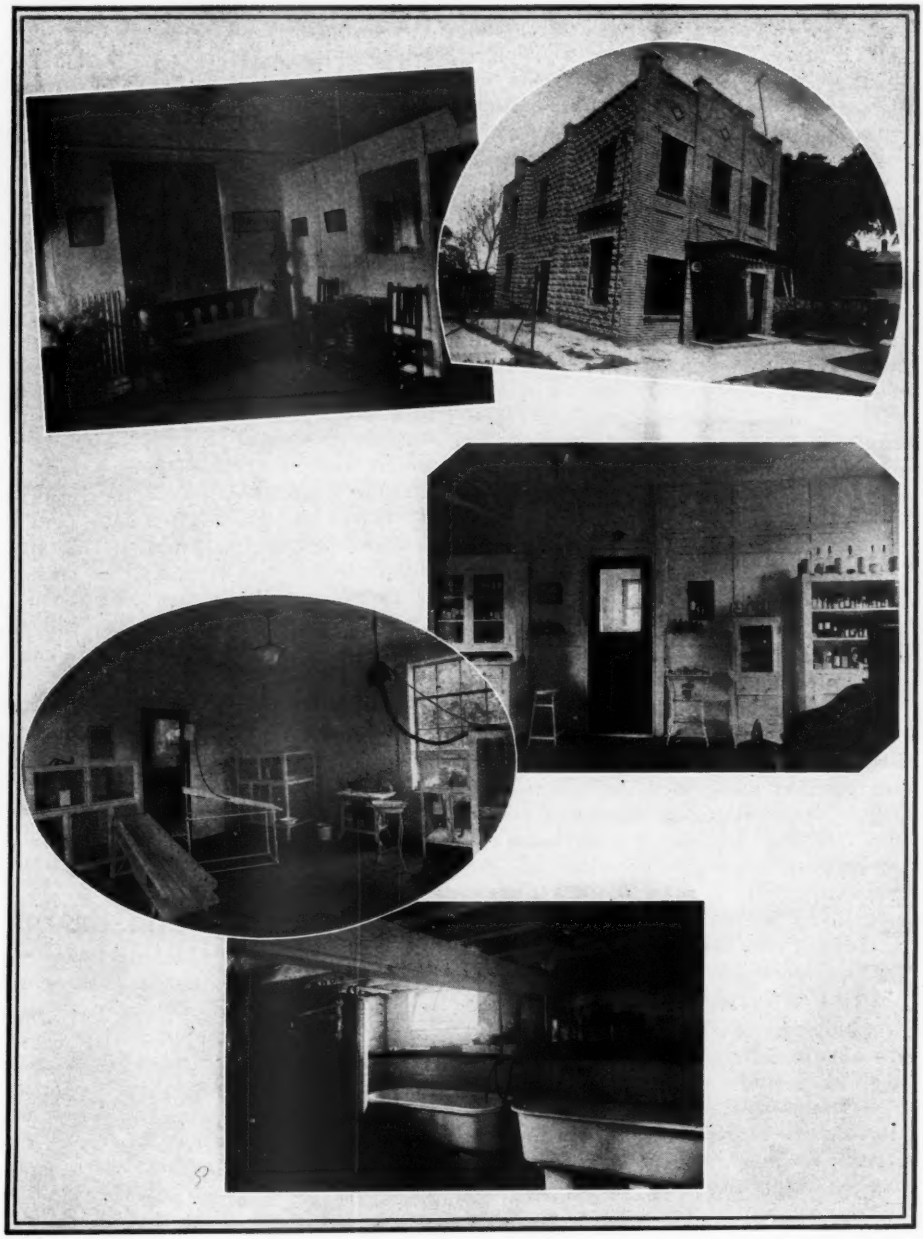
Bovine mastitis is apparently increasing in frequency probably because of the increased demands incident to an increased milk production.

Ascarid infestation is rare in Porto Rican swine, according to Van Volkenberg, Parasitologist of the Porto Rico Experiment Station.

Various worm parasites are so prevalent in stock pigs in certain sections of the south that it is impossible to feed them profitably. A carload consisting of 180 apparently thrifty 60 to 80 pound pigs when purchased by a Missouri feeder were found two or three weeks later to be harboring lung worms, nodular worms, round and thorn headed worms. There was about 70% loss in this shipment.

FAKE REMEDIES

Present-day reliable veterinary medical opinion holds that no known drug or mixture of drugs can be considered efficacious in the treatment of such diseases as contagious abortion of cattle, hog cholera, hog flu, fowl cholera, diarrhea of chicks, coccidiosis, roup, gapes, chickenpox, blackhead of turkeys, distemper of dogs, black tongue and running fits of dogs, influenza, distemper, and heaves of horses. In spite of this well established fact, preparations prescribed for use in such affections are constantly being put out. As a result of an intensive campaign under the food and drugs act, the greater part of these alleged remedies, which a few years ago flooded the market, have either been entirely withdrawn or have had their labels and circulars so changed as to prevent their being bought under misapprehension of what they can really do.—From Annual Report of the Secretary of Agriculture.



Exterior and interior views of Charles S. Gruber's Small Animal Clinic and Hospital, 424 West Superior Street, Fort Wayne, Indiana. Doctor Gruber extends an invitation to veterinarians to visit his establishment when in Fort Wayne.

GIVE YOUR IDEAS PUBLICITY

A prominent New York newspaper man, in addressing a group of professional men, once said, "Journalism is the great common medium of expression, not only for news and opinion, but for philosophy, science, fiction, and religion." The veterinarian is therefore naturally interested in journalism in so far as it brings to him new ideas that have been developed and advances that have been made along his chosen line of work. He appreciates the fact that the veterinary profession has its journalism, its "common medium of expression," its record of ideas.

There are doubtless many veterinarians who have worked out some theory or developed some method or system which, though very helpful, seldom finds its way into general use among the profession, simply because its discovery was never given proper publicity. Credit for such information is always important to the one submitting the data for publication. He thus becomes recognized among his professional brethren as an industrious and earnest worker.

The fact that valuable ideas are not always given publicity may be due to the fact that many men hesitate to contribute material for publication because they feel that they do not understand the fundamental principles entering into the preparation of a manuscript. Others look upon the compilation of an article as tedious, laborious, and even as a burdensome annoyance.

To all who have developed methods or followed out ideas that have proved valuable in the course of veterinary practice, we would say "Let us give your ideas publicity." The editorial staff of VETERINARY MEDICINE will gladly receive articles coming from readers. The staff will look after the matter of editing, correcting, and putting the material in proper shape for the printer. Then after all details have been carefully looked after, the finished article will be brought out under the name of the contributor.

Ponder this suggestion well, Doctor, "else tomorrow," as Emerson tells us in the opening paragraph of his essay on Self-Reliance, "a stranger will say with masterly good sense precisely what you have thought and felt all the time, and you will be forced to take with shame your own opinion from another."

Carleton Cleveland.

Highland Park, Ill.

RABIES AND VIPER VENOM

Madame Phisalix, who for many years has devoted herself to the study of venoms of animal origin in her laboratory in the Museum of Natural History, has reached a curious conclusion, which she presented recently in a communication to the Academy of Sciences and which brings out a peculiar similarity between the venom of the viper or asp and the virus of rabies. By combining the venom with the virus and by employing fractional and repeated doses (with the virus in excess) she was able to vaccinate dogs against the two simultaneously. She concludes from this that it will thus be easy to vaccinate hunting dogs simultaneously against rabies and against snake-bite, which would aid in diminishing the number of cases of rabies transmitted to man.—*Jour. A. M. A.*, v. 92, n. 5, 2-2-9.

ERGOTISM OF SMALL GRAIN

Some years rye, occasionally barley and wheat, are affected by ergot, a violet colored fungus which occurs in the form of a protruding spur. The inner part of the fungus is white. This ergot contains several toxic substances and is known to produce the disease known as ergotism. The poison constricts the capillaries, thus interfering with the circulation, and gangrene sets in in the appendages—tail, ears, feet. Recently a farmer sent to me a sample of feed sent in to Iowa that contained a large amount of this so-called "seed," really ergot. It comes largely in rye screenings.

L. H. Pammel.

Destroying Animals Humanely

By E. T. BAKER, Moscow, Idaho

DURING the course of a year in practice we are often called upon to destroy animals that are old and blind, or that are suffering from an incurable malady, or a broken leg or broken back due to an accident. For some years our methods have been as follows:

Horses

When called upon to destroy a horse suffering with a broken leg or broken back, we like to have a witness present when the owner requests this done. We always make a thorough examination of the animal, and write the particular data in a book we carry for this purpose. We then take our .25 automatic Colt revolver, with steel jacketed bullets, and aim to one side of the median line, rather high, so that the bullet hits the brain. An instantaneous death is the result. Some of the veterinary officers in the army shoot from the side of the head.

Cattle

We prefer the packing house method of knocking in the head and then opening the neck blood vessels. A cow will struggle more or less after the best placed shot, and stunning seems the more humane.

Sheep

Here again we follow the expert butcher's procedure. With the sheep on its left side, take a sharp knife, with a keen point, and introduce it in the jugular furrow, with the cutting edge facing the outside. With a quick cut, slash all the vessels to the skin, bend back the head until the vertebrae is fractured, and the animal passes away with a minimum amount of struggling. Don't try to shoot a sheep or knock it in the head or you will regret it.

Swine

After stunning the animal, stick a sharp knife into the vessels near the heart. Of course, one can shoot a pig, but there is always danger of not hitting the brain. We watched a "sure shot" with a rifle take three shots at a pig without killing it. If everyone could have kept a straight face the rifleman would never have known that he was using blank cartridges.

Dogs

If not too large a dog, we place it in a box, and give it, hypodermically, two grains of strychnin dissolved in warm water. In about a minute the medicine hits the heart, and in less than ten seconds the dog is absolutely dead. We never have shot a dog. Anyone who can look into the faithful brown eyes of even a strange canine and shoot it is not very highly endowed with the milk of human kindness. Chloroform causes a lot of struggling. Cyanide of potassium has never been a success with us. An owner can bring an old dog to be destroyed, and it is done so quickly and painlessly that he appreciates the method in which his pet passes away. Have the solution warm to get the best results.

Cats

The same method as for dogs is used on cats, except the owner places it in a sack and we inject the solution right through the sack into the skin. About one grain of strychnin is sufficient for rapid action.

Other Animals

Goats are handled the same way as sheep. Monkeys, wild animals, such as coyotes, cougars, etc., are taken care of like dogs. Every veterinarian should know how to shoot accurately and how to use a good knife. While we regret to do these jobs, yet they must be done, and a little thought on the subject will save the unfortunate victim a lot of suffering.

Legal Requirement as to Skill Demanded of Veterinarians

By LESLIE CHILDS, Greenfield, Indiana

GENERALLY speaking, the veterinary surgeon is bound only to use a reasonable degree of skill in the practice of his calling. The law does not demand the exercise of the highest degree of skill, and when he has exercised a fair, reasonable, and ordinary degree of skill, as measured by the degree of skill of other practitioners in his locality, he has, by the weight of authority, fulfilled all the legal requirements.

And, in the absence of a special contract, the veterinarian does not warrant a cure, and the mere loss of a case does not imply a lack of skill. If then one employing a veterinarian seeks to hold the latter liable for the loss of an animal he must prove considerably more than the mere death of the animal under the veterinarian's treatment. This phase of veterinary jurisprudence was passed upon in an interesting manner in Barney v. Pinkham, 29 Neb. 350, under the following facts.

Action for Damages Brought Against Veterinary Surgeon

The plaintiff had, it appears, employed the defendant, a veterinary surgeon, to attend a sick mare. The defendant responded, treated the animal, but without success, and after the death of the mare the plaintiff brought instant action against the defendant for damages in the sum of $200.

The plaintiff in his petition alleged among other things, "That the defendant was and is incompetent to treat sick and diseased horses; that he prescribed, and gave and caused to be given to said mare aforesaid, drugs and medicines wholly improper for the cure of and treatment of the disease from which the said mare was suffering; * * * which did cause the death of said mare. * * * "

Nowhere in the above petition did the plaintiff allege that the defendant veterinarian had been negligent in the treatment of the mare; neither did he set out in any particular manner the alleged wrongful acts of the defendant, but seems to have relied upon a general statement of the defendant's alleged incompetency and the fact that the animal died.

Upon the trial of the cause in the lower court the plaintiff was given a judgment against the veterinarian. The evidence, however, upon which the judgment was based does not appear in the report. The defendant veterinarian carried the case up on appeal, and because of the lack of evidence in the record, as noted above, the only question before the higher court seems to have been as to the sufficiency of the petition, as has been outlined. In clearing the ground to pass upon the sufficiency of this petition the court first stated the rule relative to the degree of care demanded of a veterinarian in the practice of his profession. In this connection it was said:

General Rule of Skill Stated

"A veterinarian impliedly engages and is bound to use in the performance of his duties in his employment such reasonable skill, diligence and attention as may be ordinarily expected of persons in that profession. He does not contract to use the highest degree of skill nor an extraordinary amount of diligence, but to exercise a reasonable degree of knowledge, diligence, and attention. * * * "

Following the above statement of the general rule, relative to the degree of

skill required of a veterinarian in his practice, the court directed its attention to the sufficiency of the petition. On this point it was, among other things, said:

"No doubt an action will lie against a veterinarian for gross ignorance and want of skill as well as for negligence * * *; but there is no charge of this kind unless the word 'incompetent' includes such charge, which it does not necessarily, as the incompetency may arise from physical defects, as impaired vision or other like cause.

"When it is sought to charge one employed in a profession requiring skill with ignorance or want of due care, it must be done by allegations stating that fact, and it should not be left to mere inference to be deducted from the use of vague and indefinite terms.

"The implied contract of the plaintiff in error (the veterinarian) was not to cure but to possess and apply in his treatment of the case such reasonable skill and diligence as are ordinarily exercised in his profession, * * *. The care and diligence required are such as under the circumstances a careful and trustworthy man would be expected to exercise. It is evident, therefore, that the petition fails to state a cause for action."

In conclusion the supreme court reversed the judgment rendered in the lower court in favor of the plaintiff, the owner of the mare. Holding, as outlined in the opinion, that the petition upon which the action was based was not sufficient to support the judgment, and that under the allegations of this petition the veterinarian was not liable in damages for the death of the mare.

Summary

As noted heretofore, the proof under which the owner of the mare attempted to recover against the veterinary surgeon, does not appear in the report. This, however, does not weaken the force of the higher court's statement of the general rule in the matter of skill demanded of the veterinarian in the performance of his duties; neither does it detract from the ruling that to hold a veterinarian liable for failure to exercise proper skill, negligence must be alleged, and the facts supporting such allegation must be set forth with some particularity.

So, taken all in all, this Nebraska case becomes one of considerable value to every veterinarian. It announces the rule, relative to the exercise of care required of veterinarians, in a clear manner; and, in addition, illustrates what must be alleged and shown before a veterinarian may be held liable for an alleged want of skill in the treatment of a given case. Truly it's a nice case for the veterinarian to put in his scrap book.

WOULD THIS BE CALLED "COMPENSATORY MORTALITY"

At the beginning of the century, smallpox, malaria, scarlet fever, typhoid fever, puerperal septicemia, acute bronchitis, congenital debility, whooping cough, diarrhea and enteritis, diphtheria, tuberculosis and traumatism caused about 500 deaths per 100,000 population annually. In 1928 mortality due to these same causes amounted to about 150 per 100,000 population, an aggregate decline of 350 per 100,000 people.

On the other hand, the aggregate mortality rate from appendicitis, diabetes, cancer, nephritis, cerebral hemorrhage and heart disease was about 255 per 100,000 people in Illinois in 1900. In 1928 it was about 577; an aggregate increase of 322 per 100,000 population.

If the 1928 mortality from automobile accidents, insignificant in 1900, be added to the increased losses from the six diseases, the figure rises to exactly 350 and just balances the gains resulting from declines in the other twelve diseases.

The shifts referred to have left undisturbed the mortality rates from a number of other diseases; for example, measles, pneumonia, cirrhosis of the liver, rheumatism, tetanus, hernia, syphilis and diseases of the stomach.—*Illinois Health Messenger.*

The United States Army Veterinary Service*

W. GEORGE TURNER, Washington, D. C.
Director of Veterinary Service, Office of the Surgeon General, U. S. Army

THE Veterinary Corps of the United States Army is a part of the Medical Department and is administered by a veterinary officer of the two higher grades, lieutenant-colonel or colonel, as a division of the Surgeon General's Office, the chief being ex-officio as assistant to the Surgeon General. The personal and official support given to the Corps by the Surgeon General, Major-General Merritte W. Ireland, has been and is everything that anyone could ask for.

Pay and Allowance

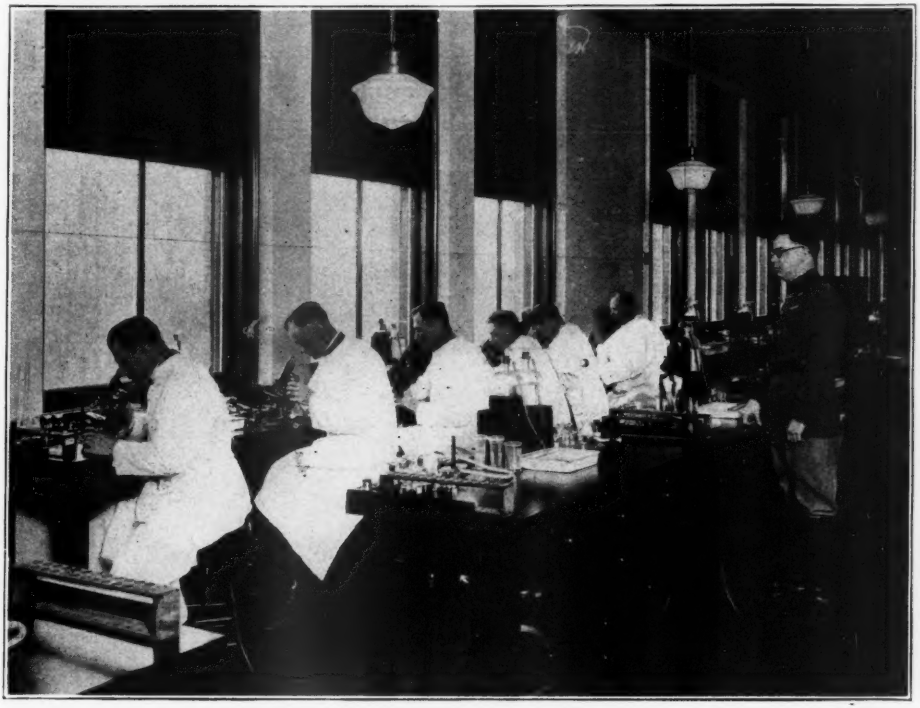
The number of commissioned officers authorized by law in the Veterinary Corps is one hundred twenty-six. Upon entering the service the initial grade is that of second lieutenant, restricted to the ages of from twenty-one to thirty years; first lieutenant after three years; captain after seven years; major after fourteen years; lieutenant colonel after twenty years; and colonel after twenty-six years. The pay ranging, according to grade, from $2,196 to $7,200 per annum, depending somewhat upon the years of service. Both figures quoted above are maximum pay for the grade with subsistence allowance included. There is mileage pay for official travel and retirement features consisting of three-quarters pay for retirement at any time from physical disability incident to the service; retirement after thirty years, with the approval of the President, with three-quarters pay; authorized retirement upon three-quarters pay after forty years of service; and a non-optional retirement on three-quarters pay at the age of sixty-four years. Leave of absence is allowed at the rate of one month per year which may be accumulated to a total of four months. Absence from duty on account of sickness involves no loss of pay. Officers are entitled to medical attendance and hospital treatment while in

* From *Animal Pathology Exchange*.

Left to right: Col. English, Capt. Ewing and Kintner, Regular Army; Lieut.-Col. Merillat, Mayo, Campbell, Major Ash, Capt. Nolochek, Van Sant and Lieut. Ogilvie, Veterinary Reserve

status of duty, without charge other than for subsistence. They are also entitled to all dental treatment without charge except where some special material may be required which is not on the supply list.

There are 608 enlisted men authorized for the Veterinary Service, plus 35 enlisted men of the Philippine Scouts provided for duty in the Philippine Islands only.



STUDYING TRYPANOSOMES
Bacteriology Laboratory, Army Veterinary School. Maj. Raymond A. Kelser (right) instructor.

General Activities

Nineteen veterinary officers are on duties which are mainly, if not totally, administrative, including the Veterinary Division of the Surgeon General's Office, the Army Veterinary School, the Army Veterinary Laboratory, Corps Area Laboratories, the Medical Research Board in the Philippines, and the Reserve Officers' Training Corps units at Ohio State University, Kansas State Agricultural College, Cornell University, and Iowa State College. The remaining 107 officers are performing station service, which includes additional duty as instructors in the line and service schools at Fort Benning, Fort Riley, and Fort Sill, and the Medical Field Service School at Carlisle Barracks, Pennsylvania.

Because of the inadequate number of veterinary officers authorized, it is necessary to assign noncommissioned officers, usually of the higher grades, staff, technical, and master sergeants, to the least important station from point of veterinary requirements. These noncommissioned officers so assigned function under the station surgeon, and, in general, render very satisfactory service.

Senior officers assigned to Corps and Department Headquarters act in the capacity of advisor to the Department or Corps Surgeon in veterinary matters.

Army Veterinary School

An efficient advanced course in veterinary medicine, including roentgenology, advanced laboratory work, and meat and forage inspection training, is carried on at the Army Veterinary School for officers of the regular service. After graduation from this school, the classes then proceed to the Medical Field Service School at Carlisle Barracks, Pennsylvania, where an intensive course of instruction is given. Both periods cover nine months.

One veterinary officer attends the Troops Officers' course at the Cavalry School, Fort Riley, Kansas, such assignment including one year as assistant to the station veterinarian prior to entering the school.

Courses of instruction for stable sergeants and horseshoers are given by the station veterinarians at garrisons having mounted organizations. These are called garrison schools.

Milk Inspection

Under Army Regulations, the Veterinary Corps is made responsible for the inspection of all meat, meat food, and dairy products offered for Army use. Within the past year, it has been possible to write into the regulations that all meat and meat food products purchased by the Army must first have Bureau of Animal Industry inspection and bear the stamp of approval of that Bureau. Therefore, antemortem and postmortem inspections

LABORATORY GRAIN INSPECTION
Army Veterinary School. Maj. Horace S. Eakins (right), Instructor.

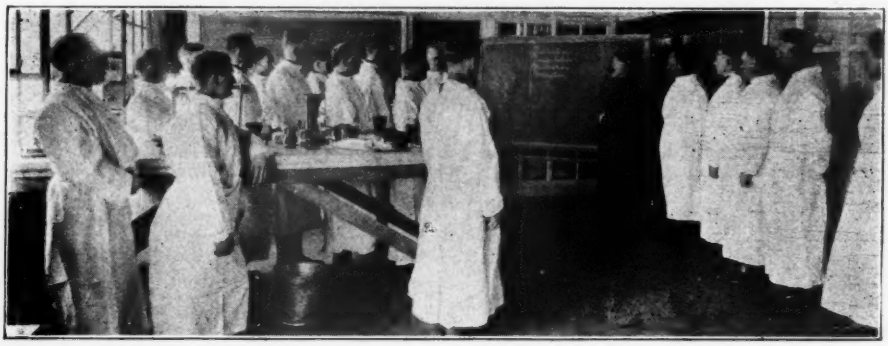
become a part of the veterinary inspection only upon rare occasions, such as in the field and in certain foreign possessions.

Dairy Inspection

Statistics compiled in the Office of the Surgeon General show that during the calendar year of 1928 there was a total of 160,746,836 pounds of products inspected, and a rejection of 934,748 pounds during the same period. Many of these same products inspected at or prior to purchase receive other inspections from time to time, such as on receipt at station, when issued to troops, etc. Milk inspection begins with the dairy and includes frequent physical examinations of the animals and at least one annual tuberculin test. All equipment and the methods of operation are carefully scrutinized and laboratory examinations made of milk samples taken at irregular intervals.

Federal Hay Inspectors

Since the agreement between the War Department and the United States Department of Agriculture entered into a few years ago, whereby officers of the Veterinary Corps were trained and licensed as Federal hay inspectors by the Bureau of Agricultural Economics, the function of inspecting all forage at time of purchase for the Army has devolved upon the Veterinary Corps, and as a result a very definite saving amounting to as much as $700,000 in one year has been made.



Dairy Laboratory Army Veterinary School. Analysis and Inspection of Deseccated Milk.

Veterinary Reserve Officers, Fort Snelling, Minnesota.

Breeding Operation

The purchase of remount animals as replacements in the Army and the rather extensive breeding operations carried on by the Office of the Quartermaster General are other large activities in which the Veterinary Corps participates.

Animals on Sick Report

As a matter of interest and as an indication of what the officer in the field is called upon to do, it might be mentioned that out of a total of 39,982 animals in the United States Army during the calendar year 1928, 19,148 horses and mules were admitted to sick report, resulting in 1,777 deaths, or an annual loss of 4.4%. In view of the great number of aged animals in the service at this time, 4.4% death rate is not considered excessive.

The Army Veterinary Bulletin

The veterinary Bulletin, as supplement to the Army Medical Bulletin, is published once a month by the Veterinary Division of the Surgeon General's Office. The Bulletin offers the members of the Corps an excellent opportunity for recording interesting cases and experiments, and for keeping abreast of the new developments in the profession. Subjects of general interest, new policies of the Surgeon General's Office, special interpretations of Army Regulations, rendition of reports, etc., are covered in editorials. It is sent to each officer of the Veterinary Corps and in addition goes to many corners of the earth.

The status of the Veterinary Reserve Corps is far from being what it should be, in the matter of membership, the quota being only fifty per cent of authorized strength. Every assistance will be given veterinarians throughout the country who wish to identify themselves with this important branch of the service.

METHOD OF COMPUTING MORBIDITY AND MORTALITY RATES

Admission and death rates at Army Veterinary hospitals should always be expressed in terms of an annual rate per 1,000 in the preparation of charts. Annual rates per 1,000 are obtained as follows: When the period is one year, multiply the absolute number of cases or deaths that occurred during the year by 1,000 and divide by the average daily strength of command during the year. When the period is one month, multiply the absolute number of cases or deaths that occurred during the month by 12 to get the number that would occur in one year, if the prevalence during the month remained unchanged for a year; multiply this annual figure by 1,000 and divide by the average daily strength for the month. When the period is one week, the procedure is similar to that for one month except that the multiplier is 52 instead of 12, and the product after multiplying by 1,000 is divided by the average daily strength for the week. When the period is one day, use 365 as the multiplier, then multiply by 1,000 and divide by the strength for the day.

QUININ SULPHATE AND FERRIC CHLORID INCOMPATIBLE

In the February issue of VETERINARY MEDICINE, I noticed an article of C. B. H. Ill., "A tonic and intestinal antiseptic for poultry, compounded of the following:

Potassium Dichromate,
Quinin Sulphate,
Iron Chlorid Solution,
Boiling Water Q. S.

Can you explain why C. B. H. mixes the Pot Dichromate as directed? Quinin sulphate does not dissolve with iron chlorid solution.

This looks to me as if one was just wasting the Quinin sulphate as it all settles at the bottom of the bottle.

I made one gallon today and it does not look good to me although I believe the prescription would be fine if the

quinin would dissolve and stay in solution.

Kindly advise if you do not think this preparation would be just as good if the quinin were omitted—I believe it would be.

I have used the potassium dichromate, but never in mixtures.—G. U. M.

Reply: At times, I have thought that the quinin did not dissolve as readily as it should, at other times it did not bother at all, and I have used the same gallon bottle to mix the last twenty gallons of poultry antiseptic in and a teacup would hold the sediment that has collected in the bottle, so what became of the quinin if it did not dissolve. It is very important as stated in my original communication to have the water *boiling hot.*

There is a difference in quinin in the matter of dissolving. I do not know what the difference is, I always order quinin sulphate by the same name and it looks the same, tastes the same and I believe has the same effect. I sometimes dissolve the quinin in the hot water before pouring it on the potassium dichromate and it does dissolve more readily in just clear hot water.

As for leaving the quinin out of the poultry antiseptic, I will say I have made and dispensed several barrels of it that had no quinin in it but as quinin is of great benefit in treating coccidiosis and a valuable antiseptic and tonic, I feel that it should not be omitted, for most flocks of poultry have a variety of infections that need all of the active principles of the combination of agents incorporated in the poultry antiseptic.

I fill pint bottles by the hundred and label them ready for use when I have need of them, and many of my clients look at the quantity of the antiseptic and take a bottle home to the good wife to use on the flock and become regular customers and boosters of the same.

Hoping this explains your question satisfactorily, and being happy to assist you in any way I can, I am

Poplar Grove, Ill. C. B. Hawes.

ANTI-POX VACCINATION IN FOWLS

In a recent issue of VETERINARY MEDICINE you referred to folicle vaccination in fowls. What is meant by this, how is it performed, and what is the purpose?—C. O. R., Kansas.

Reply: J. R. Beach of California and W. T. Johnson of Oregon and a number of others have published articles describing this procedure.

The vaccination is highly successful as a prevention of pox in chickens and appears to be equally successful in turkeys. The vaccine is made by scarifying the combs of healthy chickens and inoculating them with pox virus. When the scabs are "ripe," that is, in about four weeks, they are removed and if not to be used immediately, dried for preservation.

For use they are finely ground in a mortar and mixed with distilled water to form a heavy suspension. In folicle vaccination a minute drop of this suspension is placed in an open folicle. If the vaccine has been properly prepared, a "take" occurs in a very high percentage of fowls and immunity to pox results.

Johnson, referred to above, prefers what he terms the stick method to folicle vaccination. By this method, a scalpel is wrapped with adhesive tape leaving $^3/_{32}$ of an inch of the point of the scalpel exposed. This is dipped into the virus suspension and the fowl lightly stabbed.

Both the preparation and use of the vaccine is very economical. One gram of the scabs is sufficient for the vaccination of 150,000 fowl and by the method described by Johnson, with four helpers, one vaccinator can vaccinate 600 birds per hour.

The vaccination causes a mild reaction that does not interfere with the growth of the fowl, but if given during the laying season, lessens the production of eggs for a time. The best season for vaccination is in the late summer and early fall. The best age is after the fowl have reached the age of three months and

before they have commenced to lay or at the beginning of the laying period.

Fowl pox is a filtrable virus disease of chickens and other fowl. Once it occurs on a given premises, it is prone to recur year after year. The vaccination is not advised on premises where fowl pox has never occurred unless the disease is in the immediate neighborhood and the probability of infection great.

Where the disease has occurred on any premises, the vaccination of all young birds on the place each fall is recommended.

Johnson, whose experience in the use of anti-pox vaccine in fowls exceeds 100,000 vaccinations, regards the proper preparation of the vaccine as being the most essential factor in the success of vaccination, and attributes practically all unsuccessful vaccination to the use of a poor vaccine.

The vaccine will keep but a short time after the scabs are ground up and ready for use. The Oregon Agricultural Experiment Station supplies this vaccine for use within the state of Oregon, and places an expiration date on it of only one week.

FRIGHT DISEASE A COMPLICATION OF DISTEMPER IN DOGS

There seems to be such a variance of opinion with regard to fright disease among laymen and veterinarians alike, that I wonder if anybody else is of the same opinion as I am with regard to its etiology.

I have compiled a record of over 800 cases. The first that I have any record of treating was in Toledo, Ohio in the spring of 1902. This controverts the statement of some that it is a new disease and confined principally to the Southern states. One hundred percent of all the more than 800 cases I have treated showed unmistakable signs of gastro-enteric distemper either acute or latent. Less than 4 per cent of them died of fright disease, over 16 per cent died of distemper complications.

I doubt that any dog ever died of distemper unaccompanied by complications. Furthermore, I don't believe a dog gets over the mildest case of distemper under 18 months regardless of the treatment, any more than a human gets malaria fever out of the system in less than three seasons.

I consider fright disease just a phase of gastro-enteric distemper and have for over a quarter of a century treated it as such with results that have certainly been gratifying.

W. E. Grace.

Jacksonville, Florida.

RABIES*

Rabies is a disease that primarily concerns veterinarians. If there were no rabies in dogs, there would be none in man. It is a disease that can be controlled and eradicated easily when the general population wants it done. The experience of England and the Scandinavian countries demonstrated this. Before the outbreak of the World War, there was no rabies in Germany although it was surrounded by countries in which the disease was rife.

Fifty thousand people annually take anti-rabic treatment in this country. The cost in money, in loss of time and in anxiety is very high. Control measures are well understood but they are not enforced because they are not popular.

In Japan, where a number of years ago rabies existed to an alarming extent, the government developed a vaccine which will protect dogs for a period of a year. More than 1,500,000 dogs have been vaccinated in Japan under government control and the results prove that the disease can be reduced in this way to a very low minimum, in fact practically to the vanishing point.

In this country much voluntary anti-rabic vaccination has been done, but there are those who doubt the success of this means of ultimately controlling or eradicating the disease. Results of a single dose of anti-rabic vaccine for the prevention of rabies in dogs have not been uniform in this country, possibly because the vaccine used has not been of a uniform standard.

Major R. A. Kelser of the Veterinary Corps of the Army has recently prepared a chloroformized virus vaccine to take the place of the formalized virus vaccine heretofore used. So far as it has been tested, and it has received considerable testing, it has been entirely satisfactory.

Rabies should not occur in any civilized country.

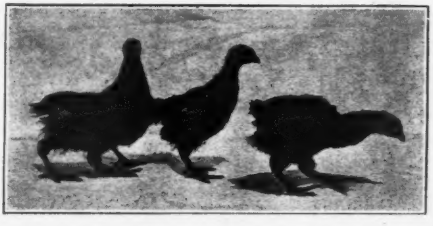
*Notes from an address by Adolph Eichhorn, at the 15th annual meeting of the Wisconsin Veterinary Medical Association, January 14-16, 1930, held at Madison.

NOTES ON UNDULANT FEVER

Undulant fever is to a considerable extent an occupational disease. The pasteurization of milk will not control it. Only 13 per cent of the cases in Iowa occurred in cities having a population of more than 5,000 and I think it will be agreed that efficient pasteurization of milk is not practical at this time in rural districts and in cities of less than 5,000. Thus, 87 per cent of the infection in that state is not susceptible of control by pasteurization.

Packing house employes furnish the greatest proportional number of cases; next in frequency of occurrence come veterinarians and then farmers. In these groups the infection is chiefly due to contact with infected animals. Undulant fever is primarily a disease of young adults. Children, that group of population most in need of milk, are remarkably resistant to the infection. It would be a great mistake to council those unable to obtain pasteurized milk to boil their milk before they use it. This would result in a decreased use of milk, which would be far more harmful to the population as a whole than is undulant fever.

Clinically, cases of undulant fever due to the porcine and bovine organism are indistinguishable. It is to be noted, however, that of three fatal cases in Iowa last year in which the type of organism was determined, all were porcine, and of four exceedingly mild cases, so mild that the cases were recognized only by accident, all were due to the bovine strain of the *Brucella abortus*.—A. V. Hardy, Iowa City, Iowa.



Nothing succeeds in practice like successful results. It is immaterial how these results are obtained—whether in the most crude, unorthodox manner or with scientific procedure.

Let us quote a few examples of what we mean: A cow has a complete eversion of the uterus. She is a highly nervous Jersey, with her constitution depleted from heavy milking. A veterinarian is called. He replaces the everted organ, and performs a skillful operation, but the patient succumbs from general shock. Another case in a cross-bred cow with a tough resistance to all kinds of infection occurs on the same ranch. The cow isn't worth much so a neighbor is called in, who has plenty of "guts" but no science. Without any antiseptic precautions and with main strength and awkwardness, he replaces the parts, puts in a few stitches of binder twine, and recovery results.

The client does not stop to think what complications may have taken place. He does not take into consideration the breed of cow; her general condition; the state of weather; nervous shock and a host of other things. All he knows is that one cow died and the other recovered.

Another client has several pure bred, delicate dogs. Most of their ancestors or close relatives died with the nervous type of distemper. A veterinarian immunizes them. Several days before, but not long enough for any clinical symptoms to develop, the animals had been exposed to distemper. With their predisposition to the nervous type, the disease wins the race against the vaccine. Both dogs die with the paralytic type. The owner advertises far and near that "Doc vaccinated 'em, but it didn't do no good." A neighbor who lives near has several hunting dogs whose ancestry runs back to a dozen different breeds. They are almost immune to distemper by nature. They get the disease in a light form, mope around several days, and then recover. The owner proudly announces: "I don't take no stock in this here vaccinatin'."

What can the veterinarian say? In fact, the less said the better.

A farmer has a bunch of hogs. They are full of worms, lack minerals, and have no more resistance to disease than the Jersey cow mentioned in the beginning. They are immunized by a veterinarian who administers good serum and virus in a skillful manner. A number of the weaker ones die.

"Ef yuh want yer hawgs killed git Doc," explains the owner to all his sympathizing friends and neighbors. A farmer boy vaccinates some more in the neighborhood. These happen to be thrifty, well cared for, and given good nursing. Nothing happens. Another bullseye for farmer vaccination and a blackeye for professional work.

Of course, in the long run science wins, but lady luck is apt to win some short races and like the little frog that "died gettin' well," some good men may fail while they are succeeding.

As a rule, veterinarians should guard their own interests more; it will lead to better reputations. They should be more independent. They should keep in mind their own rights as well as those of the client. For we are judged by the results, good or bad, and by nothing else, except in a few cases, where the client is exceptionally broadminded.—B.

Inappetence is an outstanding symptom of swine affected with cholera, flu, and acute erysipelas.

Twenty-four thousand horses are shipped into Wisconsin annually and sold to our farmers and others.—C. A. Deadman, State Veterinarian.

According to the latest statistics available, there are 14,029,000 horses in the United States. Five years ago there were 16,470,000. The average decrease per year has been around one-half million head.

Iowa still leads with 1,089,000 head, with Illinois second with 839,000. Rhode Island's 4,000 horses is the smallest number reported from any state.

The value per head has risen from $64 in 1925 to $69 in 1929.

There are 5,447,000 mules, which is a decrease of only some two hundred thousand head during the past five years. Their value has held steady at around $82 per head.

The future of the horse is a moot question. There are many places that he alone will fill. There always will be horses, but just how many and how employed only the future will reveal.

The practitioner of today need not worry about his equine practice totally fading away. In many parts of our country, the horse is the only method of transportation about four months in the year. Small farmers find horse labor cheaper than machine power. Deliverymen find the many stops more expensive with a motor than with a team.

However, our veterinary colleges should pay more attention to food producing animals, such as dairy cows, sheep and hogs. Even foxes require much veterinary care, and the old routine of using the horse as the main subject is a serious mistake.—B.

"Remember way back when——"

Cattle Plague in India

By J. J. De VALOIS, Katpadi, South India

Cattle plague in India is known as "rinderpest," from the German "rinder" (cattle), plus pest. It is the most important and most feared contagious disease of cattle and buffaloes in South India. The disease annually claims a toll of thousands. It is one of the ways, though a very uneconomic one, of keeping down the cattle population. India is estimated to have 260,000,000 cattle for 330,000,000 people. Cow slaughter is bitterly opposed by the orthodox Hindu. Breeding is in no way restricted. Communal grazing is universally practiced. Experts calculate that 90 per cent of the cattle are an economic loss. Nevertheless, when plague breaks out in a village it spreads rapidly through the district and is a terrible calamity. The disease is of such a highly contagious nature that when a case occurs in a community, it is almost impossible to prevent its spreading by the ordinary methods of segregation or isolation. Birds, dogs, cats, wild animals as well as people readily carry the infection. Ignorance on the part of the great majority and congested living conditions further complicate control measures.

The disease manifests itself by a high temperature of 103° F. to 106° F., by bran-like eruptions on the inside of the lips, along the gums of the lower jaw, the dental pad, the sides of and under the tongue and even the roof of the mouth. By the fourth day there is a continuous discharge from the eyes, the animal will be prostrate, and a bloodstained, watery diarrhea will set in. The animal will usually die in from seven to ten days.

This terrible disease has been one of the many reasons why more rapid progress has not been made in improving the grade of Indian cattle. Imported cattle are even more susceptible to the disease than are native cattle and if attacked seldom recover. Of recent years a specific has been found for controlling the disease by the serum simultaneous method of inoculation. For a 500-pound animal, 1cc of virus and 50cc of protective serum are injected into opposite sides of an animal's neck. There usually is a slight reaction within three or four days. On the eighth day an additional dose of 5cc of virus is given to make the immunity permanent. The animals are carefully observed for complications at this time and another dose of protective serum is given if necessary. Healthy animals given this treatment are infectious for a period of 13 days and are held in strict quarantine. Vaccination of this type may be given only under the personal supervision of the Civil Veterinary Department. When the isolation camp is broken up the immunized animals are branded on the rump with the regulation stamp to certify their protection.

Preventive innoculation is seldom practiced except in Government breeding farms or by a few progressive cattle breeders. The common people are only recently calling in the help of the veterinarians when an outbreak of the disease occurs. For centuries, and even today, it was supposed that the village God was angry with the people and had to be propitiated with all sorts of sacrifices. The veterinarians still often find their way blocked by stubborn, superstitious opposition when they come in to offer their services. When an outbreak does occur the Civil Veterinary Department is deputed to the area and make the necessary vaccinations free of charge. Sick animals are given only the serum treatment and generally 75 per cent recover. In this case, all the animals in the village or district are treated in a wholesale way without any isolation or segregation.

The benefits of inoculation are rapidly

An Indian Veterinary Surgeon demonstrating the serum-simultaneous inoculation for Rinder-pest. Notice the characteristic hump and horns of the Indian Zebu. The trees in the picture are palmyra palms. The leaves are used for roofing material, the sap for liquor and the lumber for building houses. Baskets and rope are also made from the leaves and fibre.

A typical country-side in South India. There are no fences nor demarcations to separate one farmer's field from his neighbor's. All the cattle of a village are gathered together in the morning by small boys and grazed along the roadsides, in waste places or fallow fields. The individual farmer must protest his own crops. As soon as the field is harvested it is open to everybody.

becoming known among the cattle owning Indian farmers. The demand for serum is much beyond the present supply. Muktesor at the foot of the Himilaya Mountains in Northern India, is the

Indian women religiously gather the dung from the sacred cow every morning, mix it with some straw and water to make cow-dung cakes. These are pasted onto a wall to bake in the sun for a few days and are then used for fuel. India burns up thousands of dollars worth of valuable fertilizer in this way every year.

only institute in all India to produce the vaccine necessary to protect 226,000,000 cattle. Muktesor is 3,000 miles from Southern India. Frequently there is a very serious delay in getting the serum when an outbreak of rinderpest occurs. Steps are being taken to increase facilities to meet this fast growing demand for the anti-rinderpest vaccine.

SUPPOSED POISONING FROM ONIONS

Dr. M. A. Hollingsworth, Chamberlain, South Dakota, writes as follows: "I have a few cases with following symptoms and thought they might be due to wild onions as there are so many in the pasture. In a herd of one hundred cattle there are two milk cows sick as follows: First symptoms noticed were very much like apoplectic anthrax—they would root around and suffered much from skin irritation and systemic parch—acted as though they would die soon. In twenty-four to thirty-six hours they were up and walking about. The skin swelled as though it would burst about the head and ears, and exuded a yellow serum. The eyes were swollen almost closed and very yellow. After forty-eight hours after first symptoms, they were pretty well again.

I have cases in two or three herds like them—tumors from under the skin just like skin anthrax only the exudate is yellow instead of red or black. These cows almost burned up with fever before I saw them but it went down very suddenly.

Can you give me an idea as to what weed is causing it; if any? I am wondering if wild onions in excess would cause such symptoms."

I suspect that the poisoning is not due to onions. If there is a skin eruption it may be due to a member of the crowfoot family, *Ranunculus abortivus,* or one of the related species. There is a possibility of course that the poisoning here may have been due to an onion-like plant, the plant camas (Zygadenus), which is known to be toxic and is fairly common in the region where Doctor Hollingsworth lives. I suspect that the poisoning may have been due to that plant. The Camas produces a kind of uneasiness and irregularity of movement. These irregular movements are pronounced, causing incoordination of the muscles, spasms, and sometimes excitement.

L. H. Pammel.

White Scours of Calves

I have charge of dairy with over 200 head of pure bred Guernseys, where the calves are dying too frequently from scours and shall appreciate your advice as to how to control this situation.—H. T., New Jersey.

Reply: Being in a dairy district I have for years been forced to take an acute interest in this problem. At the time I took up the practice of veterinary medicine, the writers on this subject in dealing with the channel of infection were either silent or quoted the conclusions of Nocard, that white scours in calves was transmitted chiefly, if not solely, through the umbilical wound. After a few years in practice my observations led me to doubt this theory. In the year 1903 I saw more of this trouble in my community than I have seen in all the years that have followed. It seemed as if every client owning a dairy appealed to me for relief from this destroyer. After instituting every known form of strict sanitation so as to protect the umbilical cord from external infection, the trouble still continued. In addition to sanitation of the stalls I decided to eliminate positively external umbilical infection in some herds near my office, by either being present myself or having a reliable assistant present, at the time of parturition. I had the fetus caught in a clean sheet and the umbilical cord tied with a sterile ligature, reaching into the genital canal to do so in some cases so as to ligate before cutting or breaking the cord; this failing I then decided the digestive tract was the point to protect, and the results obtained which I shall discuss under "Control and Treatment," have proved conclusively to me that while umbilical infection may be one source of transmission and the swallowing of the amniotic fluid in utero may be another, the overwhelming majority of cases are due to infection through the digestive tract, and that after the calf has been dropped, and not in utero.

Some associate white scours and abortion while other very reliable workers question very positively that there is any common alliance between abortion and white scours, but that they are two distinct etiological entities. Schroeder was one of our authorities who held this view and in a communication received from him some years ago, he gave me the following data of experimental evidence gathered at the federal experiment station at Bethesda, Md.

"At the station we have had much abortion disease and many abortions, but we have not had a single case of white scours, notwithstanding that we have had many calves of healthy cows under observation which were given abortion infected foster mothers, and many calves of abortion infected cows which were given healthy foster mothers."

While it is a fact that in some herds in which abortion disease is raging, we often have many cases of udder infection and not infrequently in such herds many of the calves that are carried to or near the end of a normal gestation period, develop a highly virulent form of white scours, it is likewise true that we may and do have in herds severe abortion without the slightest evidence of white scours. Conversely we may have infectious scours with no prominent evidence of abortion disease.

I could give voluminous data of heifers aborting, the offspring of dams that never aborted; and conversely of heifers from aborting dams that never aborted when either removed from the infected herd or when kept in the same herd after strict sanitation had been carried out.

Symptoms

White scours or infectious diarrhea in calves is an acute infectious disease of the newly born calf. The symptoms, which may appear from a few hours to many days after birth, are manifested by a per-

sistent white and frothy diarrhea and loss of strength, the mortality ranging from 50% to 90%. Death may occur during the first twenty-four hours, or the disease may run a course of several days or weeks, terminating either in recovery or death, with pulmonary lesions. Calves that succumb the first day are usually those that are weak and undeveloped.

With stronger calves frequently the first indications are that the calf ceases to feed, stands in one place with its back arched, and a staring look; or it may be very much depressed and lie down a great deal of the time. Diarrhea ordinarily appears early as a symptom; the material is very fluid, at first yellowish, later grayish white in color; frequently frothy containing lumps of clotted milk and not infrequently blood streaks. The odor is described as being peculiarly sweetish and putrid. The parts around the anus are soiled and the hair matted. The calf loses flesh rapidly, the flanks are hollow, eyes sunken, hair dull, often lying listlessly with occasionally grating of the teeth, the nose is hot and dry, the temperature elevated. As the disease progresses the body may become cold and clammy and the temperature subnormal. In some animals violent straining hurries on rapid exhaustion. In severe cases exhaustion is sometimes so complete as to border on coma for a time preceding death. In some cases the animal bloats considerably causing pain and uneasiness by pressure on the abdominal walls. In cases where the infection is apparently milder or the calf more resistant and the disease is manifest in a more chronic form, articular or pneumonic symptoms may be pronounced.

Control and Treatment

Finding that all efforts directed at the prevention of umbilical infection failed, I had maternity stalls prepared by thorough disinfection, the floors limed and newly bedded. All animals that had the appearance of calving within a week or ten days were thoroughly scrubbed with soap and disinfectant and covered with two blankets until they had dried, then transferred to the maternity stalls or to the section of the barn prepared for them. The cows were taken from these stalls daily and udders and hindquarters thoroughly scrubbed with soap and warm water and their vaginas douched with a douching powder that has proved the most satisfactory of anything I have used. This powder is made up of sterilized sodium chlorid and permanganate of potash. This treatment was continued until the cow freshened.

As soon as she freshened the first milk was drawn with the hope of removing the infected milk lying in the wells before the calf was allowed to nurse. There is no danger of removing all colostrum by such milking since this substance is present in the udder of the new milk cow for several days. The calf was then allowed to nurse and when finished was separated from the dam either by a movable partition or by tying in one end of the stall and allowed to nurse again only when the dam had been properly prepared, that is the hindquarters and udder thoroughly washed. This was repeated several times daily for a few days. After that the calf was fed only twice a day and then from a pail. If there was any evidence of scours all food was withheld for twelve hours and the calf was given a dose of aromatic oil, made up of mineral oil containing camphor and eucalyptus. This was followed by a diarrhea mixture containing camphor, kino and formalin. The latter was repeated as often as seemed advisable. Where indicated stimulants were given in a little boiled milk as an adjunct.

We still follow this method of treatment in our practice with the addition of course of biologics, but I am thoroughly convinced, after some twenty-five years' experience and after having had the privilege of consultation with some of the best veterinary practitioners in the country, where calf scours threatened to literally ruin some stockowners, that in

order to insure success biologics must be supported by sanitation if this scourge is to be conquered. I am also equally as sure that unless the proper use of biologics is carried out most faithfully, the stockowner will be injured and the veterinarian and the treatment condemned.

To illustrate what I mean, I will cite a particular herd in one of the New England states. I was called in consultation by the veterinarian in charge of this herd, consisting of seventy-two mature purebred females. There were seven living calves on the farm. The loss from white scours for over a year had averaged about 90%, notwithstanding that many things had been tried. The experience of this veterinarian was very much like that of the one whose inquiry prompted this article. We instituted sanitary procedure at once and instructed the herdsman and nightman to notify the doctor as soon as a cow showed any evidence of calving. Either the doctor or the herdsman accordingly took care of the navel. Newborn calves received at once 30cc of anti-calf-scour serum and 2cc of bacterin. Every calf received either 3cc or 4cc of bacterin on the fourth or fifth day following the first dose. If a large calf 4cc were given, if very small, 3cc and a week later 6cc were given. A dose of aromatic oil was also given after the calf was a few hours old. If at any time a calf showed drowsiness other treatment as outlined above was begun and another 20cc of serum given at once. If there was any evidence of diarrhea a high enema of warm water to which had been added a little bicarbonate of soda was also given. We cautioned the herdsman that past experience had led us to believe that each calf would need to be watched and serum given from time to time until a sufficient period had elapsed for the bacterin to help establish immunization, which would probably be about a month. We also cautioned that this regimen would need to be kept up for months until the infection on the place had been subdued by sanitation and lack of re-infection.

Accordingly this treatment was carried out with marked vigilance until forty-four calves had been born without a single loss. Then some one suggested trying to do without serum and bacterins with the result that the forty-fifth calf died. The method was then put in vogue again until the following summer, making a period of about a year. The infection on this farm now seems to have died down.

HONEST EXHIBITORS OF LIVESTOCK PROTEST AGAINST "PLUGGING" TRICK

There is one kind of beauty that is only skin deep which has encountered severe criticism in the Federal meat-inspection service.

When the carcasses of several cattle entered at the recent International Livestock Exposition in Chicago, showed evidence of the practice known as "filling" or "plugging," this questionable trick, resorted to by some exhibitors in an effort to win blue ribbons, became a topic for official discussion at the U. S. Department of Agriculture in Washington, D. C. "Plugging" is the injection of tallow, oils, lard, and other substances under the skin of an animal to fill depressions to deceive the judges in the show rings. Under the Federal meat-inspection regulations, the bruised, inflamed, or otherwise abnormal parts of carcasses are condemned.

Though long known to exist, this deceptive practice deserves condemnation, not only from a meat standpoint, but because of its obvious adverse effect on livestock breeding. Of 453 show animals entered in the competition and slaughtered at Chicago in Federally inspected establishments, six carcasses showed definite signs of so-called "beauty doctoring." This is only a small percentage, but the number is sufficient to show that the practice is done.

The improvement of animal types depends on the use of breeding stock of superior conformation, and this confor-

mation should be of the natural kind that can be transmitted by breeding. Hence it is important to maintain livestock judging in a manner that encourages honest and reputable exhibitors and disqualifies those who use questionable methods to win.

Comments from many sources, including editorials in the livestock press, recognize boys' and girls' club work as a new factor in the situation. Veteran showmen, who, from the personal standpoint, have accepted conditions as they have existed, are stirred to become sponsors of more rigid rules in the interest of youthful exhibitors.

"The bureau considers that the practice of 'plugging' show animals (filling up depressions by injections of tallow, lard, oils, and other substances) is deceptive and detrimental to the best interests of livestock breeding," says Doctor Mohler, and "it recommends the disqualification of animals so treated, together with such publicity, penalties, and other deterrent action as will free livestock shows from this abuse."

It will be remembered that years ago President James of the University of Illinois would not permit the university to exhibit in the college contests at the International Live Stock Exhibition in Chicago because of the practice (which he considered fraudulent) by some other schools of "plugging" animals exhibited in these contests.

Plugging is at best a crude and seldom successful means of eliminating "dimples" in show animals. As yet no attention has been given by the show management to the operation of "cutting the ties" that produce these dimples, probably because when the operation is skillfully performed a sufficient time before the animal is exhibited the operation is undiscoverable. The ethics of severing the connective tissue bands that hold the skin to the bony frame of the animal in no way differs from attempting to obliterate the dimple by injecting paraffin or tallow beneath the skin to fill out the dimple.

SOME WISCONSIN TB RECORDS

The problem of tuberculosis eradication in Wisconsin is solved. Some work, of course, still remains to be done but it will go on without interruption. There is no opposition to it. Some of our work in tuberculin testing, I think, comes near to breaking all records. For example, in the first test in Kenosha County, 40,000 animals were tested and 20 per cent or 8,000 reactors removed. On the retest, only 147 or less than 0.4 per cent were found.

There are in the state now more than 50,000 clean herds and over 1,000,000 animals have been tuberculin-tested in the last six months.

Wisconsin dairymen have shipped out of the state more than 40,000 tuberculin tested cattle within the last six months, 812 of these cows going to Sweden.—C. L. Hill, Chairman, Commissioners of Agriculture and Markets, Madison, Wisconsin.

MORE WISCONSIN TB RECORDS

More than 20 per cent of the Wisconsin hogs killed at Milwaukee packing houses show tuberculosis infection, and while the percentage of tuberculosis infection in Wisconsin hogs is not decreasing, the percentage of condemnations has decreased greatly with the progress of bovine tuberculosis eradication.

It is evident, however, that avian tuberculosis will have to be eradicated or at least brought under control to stop the enormous loss now resulted from tuberculosis infection in hogs.

The percentage of tuberculosis infection in Wisconsin hogs is always higher in those slaughtered in the spring than it is in those slaughtered in the fall.—A. E. Behnke.

USE OF ACRIFLAVINE SOLUTIONS INTRAVENOUSLY

I have had a number of inquiries as to the dosage of acriflavine used in the cases that I reported in the December issue of VETERINARY MEDICINE (page 511):

For ordinary antiseptic purposes, I use one tablet dissolved in a pint of water, which makes a 1:5000 solution.

In my experiments, I tried different dosages and solutions of different strengths. A 1:500 solution was used on a number of animals without bad results other than a considerable swelling over the site of injection in a number of cases. However, I seem to get just as good results in using a 1:1000 and a 1:2000 solution as from the stronger solution and in these cases, in no instance was there a phlebitis or subcutaneous swelling following the injection.

Occasionally I found it advisable to repeat the treatment two or three times. These cases, however, were in herds in which the infection was long standing.

Supplemental to my former report, I might add that in one of the herds positive to the compliment fixation test before the intravenous injection of acriflavine, and negative to the test afterwards, that an abortion occurred six weeks later. I returned to the herd and again tested the animals and found two reactors, the aborter and one other. My first thought was that the acriflavine injections were uncertain or of but transient effect, but the history of the case dispelled this belief. One of the reactors was an animal that had been added to the herd without test after the previous test was made, and the circumstances seemed to point to this animal as the source of reinfection in the animal that aborted.

This circumstance seems to imply that intravenous injections of acriflavine overcome the infection in the animal at the time, but confer no immunity against reinfection on later exposure.

A. H. BRYAN.

Baltimore, Maryland.

STARVATION AND DEHYDRATION IN THE DOG

In order to note the effect of starvation and dehydration, a dog for eight days was fed as usual but received at first, once a day, then twice a day, and then three times a day, 0.03 Gm. of apomorphin hydrochlorid hypodermically. He lost weight. Then for twenty-nine days he was not given any water or food. At the end of twenty-nine days he had lost 25 pounds (11 Kg.) but was still able to jump up and was interested. He was then given a pint a day of a solution of 25 per cent dextrose by mouth for forty days; he became lively and growled at his neighbor but did not gain any weight. To determine the result of vomiting accompanying starvation and dehydration, another normal dog was not given any food or water, but received 0.06 Gm. of apomorphin hydrochlorid morning and night, which caused him to vomit two or three times after each dose. Toward the last of the thirty-two days he vomited very little and many times only retched. The last ten days he was lying down most of the time, and when noticed he would not get up as formerly but would just wag his tail. He was much weaker than the other dog and developed an inspiratory dry murmur. He was then given 1 pint of 25 per cent dextrose solution daily for forty days. He was lively but did not increase in weight.

It was a point of interest to learn that a dog could exist for twenty-nine days without food or water and at the end of that time be what one could call active and that another dog vomiting twice daily could at the end of thirty-two days wag his tail and walk about. One fact in the three instances here given provokes the query: May not starvation and dehydration be a benefit—a method of conservation and defense? Dried apples and prunes preserve their nutriment; the mummy is preserved by dehydration; we know that the aged are thin, and that infection spreads slowly in dehydrated tissue. It would seem that more study is needed for the solving of these questions.—John P. Gardener in *Jour. A. M. A.*, v. 91, n. 5, 12-22-28.

Reviews and Abstracts

Etiology of Warts in Cattle

Occurrence. The common wart, *verruca vulgaris,* has been described as a specific type of epithelial overgrowth, nonmalignant in character. It is well known that warts are of common occurrence in animals and in man. Adults may be affected, but the young are far more susceptible to these cutaneous growths.

Warts may occur on any part of the body, but in different species they seem to have certain preferred locations. In bovines the primary location of the warts depends somewhat on the age of the animal. In cows the warty growths are usually found on the teats or some other part of the udder, while in calves or yearlings the growths most frequently have their origin on parts of the head, sides of the neck or shoulders. Occasionally the warts in young cattle may spread from the point of origin to other parts, as the sides, back or abdomen, eventually involving large areas of the skin surface.

In calves these warty growths may become large and pendulous, sapping the strength and greatly inhibiting the growth of the animal affected. In some cases warts disappear spontaneously without apparent cause or without recourse to treatment of any kind.

Economic Importance. As no figures are available it would be difficult even to approximate the total number of cattle affected annually with warts. It may be stated, however, that available data on the number of warty hides encountered in some of the larger slaughtering establishments indicate that the affection is probably increasing. One of the large slaughtering establishments has estimated that from 15% to 25% of the hides have been found affected at certain periods, particularly during the summer season.

As to the damage caused by warts, tanners state that the final effects of such growths on the hides of cattle are somewhat similar to those observed in "grubby" hides; i. e., holes are found in the hides after tanning, rendering the parts affected practically worthless. The total number of warty hides found annually is unquestionably large, and since these hides are greatly reduced in value, the yearly loss is sufficiently large to make it of considerable economic importance to the leather industry of the country.

Experiments. Creech[1] after outlining the problem as stated in the foregoing goes on to say that it is commonly believed at present that warts are infectious. But very little experimental work has been done in this country on the transmission of warts in animals, although a number of experiments in their transmission in man have been recorded. The author undertook a series of intracutaneous inocculations in cattle with emulsified wart material from different specimens, and a like number of inoculations with filtrates from the same warts. Altogether 22 inoculations were made which resulted in 15 "takes," eight with emulsified wart material and seven with wart filtrates.

The inoculations were made in calves up to one year of age and the experiment shows that warts in cattle can be transmitted experimentally with a fair degree of regularity in cattle of this age. The warts produced by the inoculations were typical in appearance for warts occurring naturally in cattle. The fact that warts were transmitted practically as readily by bacteria free filtrate as by the emulsified wart material indicates that the cause in common warts of cattle is probably a filtrable virus.

On the average the inoculated warts continued to grow for four months and then rapidly decreased in size. By the end of the sixth month most of the warts had disappeared and a month later all were gone. In this they did not differ much perhaps from naturally occurring warts in cattle.

[1] Creech, G. T.; Experimental Studies of the Etiology of Common Warts in Cattle; Journal of Agricultural Research. Vol. 39, No. 10; November 1929.

Undulant Fever and Abortion Disease

At the annual meeting of the Nebraska Veterinary Association, Van Es[2] presented a paper in which the available evidence was summarized, as well as the conclusions which could be based upon it. A brief historical review of Malta or undulant fever in man and animals and of the Bang infection of cattle preceeded the analysis. It was pointed out that these diseases existed for a long period without it being at all suspected that they had any relation to one another. The work of Miss Evans of Washington, D. C., supplied the first indication that the germs which cause the two diseases were very closely related if not identical.

Since this was shown a number of cases of undulant fever originating in cattle and possibly also in swine have come to light. The evidence shows that cases in humans are surprisingly few in comparison with the chances of infection. Either the germs of the disease have but little disease producing power for humans or the latter are exceedingly resistant to the infection.

It appears that infection may come about either by the drinking of raw milk or by direct contact with aborting cattle or swine. To veterinarians, packing house employees and farmers caring for infected livestock, the disease is manifestly an occupational one.

Human cases of cow borne undulant fever are relatively mild, although prolonged debilitating illness may be experienced by infected persons.

It was pointed out in the paper that the existence of this form of undulant fever has been proved and that it must be reckoned with. It was also urged that a distinction must be made between actual and active cases and persons who merely give a positive reaction to the specific blood test. The latter is always significant and may be a valuable aid in the recognition of the disease, but does not necessarily prove actual disease or positive infection.

Any disease communicable to men should be a matter of concern and the cow or hog borne undulant fever should be no exception. It is as yet difficult to determine what amount of special effort should be devoted to this problem. Statistical inquiry may or may not reveal it as a disorder comparable to diphtheria, typhoid fever, smallpox and some others, but until more precise evidence becomes available there scarcely seems to be need for very radical measures.

In the meantime, all that can be done toward prevention should not be neglected. Pasteurization will certainly make a milk supply safe, but it would not protect against direct contact infections.

The latter can be prevented by antiseptic measures when handling infected animals. In this connection, special care should be given to wounds and abrasions. Special garments should be worn by people attending infected stock and they should not handle foodstuffs unless they have cleaned themselves with thoroughness.

The prevention and eradication of the disease among livestock is, after all, the most intelligent and most effective way to prevent the disease in man.

Control of Abortion Disease in Delaware

Palmer,[3] in a 50-page bulletin containing numerous tables and diagrams, records a study of abortion disease undertaken by the Delaware Agricultural Experiment Station in 1919 and continued until the present time. The first attempt was made by the use of living organism vaccines and this was carried on for two years, but discontinued in 1921 because the results were unsatisfactory.

Two different plans of control by the use of the blood test and segregation of reacting animals was then undertaken. Under the one plan, two herds were maintained entirely separate, one herd containing the positive reacting animals and the other, those that reacted negatively.

[2] Van Es, L.; Undulant Fever in Man and Its Relation to Abortion Disease in Farm Livestock; Paper presented before the 32nd annual meeting of the Nebraska Veterinary Medical Association, December 11, 1929.

[3] Palmer, C. C.; Studies on the Control of Bang's Abortion Disease of Cattle; University of Delaware Agricultural Experiment Station Bulletin No. 163; November 1929.

The other plan and the one most extensively used involved no separation of the positive reacting and the negative reacting animals except at the time of parturition or abortion and for a period of four weeks following.

Both plans were satisfactory and resulted in freeing the herds from abortion in from three to six or seven years, depending upon how long the reacting animals remained profitable to their owners. The second plan was, of course, the less expensive and therefore the more widely applicable. It had the disadvantage, however, of requiring more intelligent and more thorough co-operation on the part of the herdsman. In fact it was not workable unless the owner of the herd and the caretakers intelligently and wholeheartedly carried out the instruction which required of course, among other things, careful records as to breeding and a close scrutiny of the animals that those approaching normal parturition and those approaching abortion be separated from the herd and placed in the quarantine pens before infection of the premises occurred. The extreme infectiousness of the products of abortion was shown by two instances where abortion occurred in the pasture, and though cleaning and disinfection was instituted as soon as the abortions were discovered, yet in each instance five new reactors were shown on the next test of the herd following the accident.

Practically all of these herds were placed in the experiment when the disease was on the upgrade and in all such instances the amount of abortion in the herd showed a distinct and often alarming increase during the first year of the experiment. This proved very discouraging to the owners and it was with some difficulty that they were induced to continue the experiment. The second year, however, showed a marked decrease in the amount of infection in the herd, and following the third year, new reactors, except as a result of the two unobserved abortions referred to above, no longer occurred.

Positive reactors in herds in the experiment reached 40% of the total number in the herd during the first year, of the experiment, so it may be said to have been conducted on badly infected herds. One important thing brought out by the study and a thing that should not be overlooked regardless of the method of control undertaken, was the fact that in the negative herds and in the whole herd after all reactors had been eliminated, abortions frequently ranged about 5% and in one or two instances, reached 10% of the number of cows in the herd. It would appear that this range of 5% to 10% may be taken as the normal percentage of abortions in Delaware dairy herds of from 20 to 200 cows, where the Bang organism is not a factor.

Unfortunately no record of sterility or breeding efficiency tables from the herds is given in the Bulletin. If in these herds, as is usually the case, sterility was somewhat more prevalent than abortion, it would make the problem of the Delaware dairymen serious, even without the Bang bacillus and hopeless with it.

A record of some experiments in the intravenous injections of acriflavine in the control of abortion in cattle are given in this bulletin. No effect on the reaction to the agglutination test could be noted from the use of acriflavine. The number of abortions, however, that occurred in the ten positively reacting cows during the time of experiments was only one and the author suggests that the acriflavine injections may have been responsible for some of these nine positive reactors carrying their calves to full term.

The experiment is summarized as follows in the herds where segregation was practiced only at parturition and for four weeks thereafter.

Herd No. 1. 40% infection during the first two years. Required four years to eradicate the infection. Eradication was accomplished at practically no additional cost to the owner.

Herd No. 2. The work was undertaken at a time when the disease was increasing rapidly. It was brought under control within two years. No new cases have appeared during the past four years.

Herd No. 3. Only two reactors in the herd. No new cases have appeared in the herd during the past nine years.

Herd No. 4. Work was undertaken in this herd at a time when the infection was increasing rapidly. Isolation of the positive reactors at calving time has apparently checked the spread of the disease and the reactors are being eliminated from the herd gradually as they become unprofitable to the owner.

Herd No. 5. Partial segregation followed by disposal of the reactors served to eliminate the disease from this herd.

Where complete separation of the positive and the negative reacting animals was practiced, the experiment is summarized as follows:

Herd No. 6. One hundred and three positive reactors found, 37%. Eighteen months required to eradicate the infection from the negative herd.

Herd No. 7. Poor co-operation from the owner. Eradication in the negative herd accomplished after two years' testing.

Herd No. 8. Reactors continued to appear for several years in the negative herd. Eradication was finally accomplished.

Herd No. 9. Eradication of the disease was easily accomplished.

Herd No. 10. In this case, two farmers with 24 cows each and 50% reactors pooled their herds. One of them took the reacting herd and the other the negative herd. All calves were raised on milk from the negative herd. Positive reactors continued to occur in the negative herd for four years. After five years the negative herd was adjudged abortion free, the positive herd disposed of and the negative herd divided between the two farmers. At this time it consisted of 40 cows in milk, so that each farmer had a negative herd of 20 cows to replace the former herd of 24 cows, 50% of which were infected.

In this instance the complete separation of the positive and negative animals was, of course, effected without any increased cost for buildings.

The immediate financial outlay necessary to supply the average small dairy farm with two sets of buildings, thus permitting a complete separation of the positive and negative animals is prohibitive, and thus this plan of eradicating infectious abortion is of limited practicability. On the other hand, small additional outlay, and on most farms, no additional outlay is required for buildings where the positive animals are separated from the herd only at calving time and with intelligent co-operation on the part of the owner, this method of handling the disease is of almost universal practicability.

Hygiene and Fox Farming

The prevention of diseases on fox farms is of importance not only because many ailments of foxes are preventable, but also because curative treatment is less successful with foxes than with most domestic animals. The quality of fur, likewise, is to some extent dependent upon the conditions under which the animals are kept.

Hanson,[4] in a recent bulletin, discusses briefly hygiene of foxes and sanitation in fox ranching. No attempt is made in the bulletin to discuss the diseases of foxes and their treatment.

The Reliability of the Tuberculin Test

The use of various kinds of tests has accompanied the progress of mankind. Some are of simple mechanical nature; others relate to highly specialized sciences. Within the memory of the present generation many technical tests have been developed with resulting benefit to agriculture. The chemical test for determining butterfat in milk is a familiar example. Others have to do with the fertility of the soil and the nutritive properties and purity of foods.

In human and veterinary medicine there are likewise many tests to determine the presence of certain diseases and the freedom of the body from various disorders. Among such tests is the use of tuberculin for determining the presence of tuberculosis,

[4] Hanson, Karl B.; Hygiene in Fox Farming; U. S. Department of Agriculture, Bureau of Biological Survey Leaflet No. 47.

sometimes called the "captain of the men of death." The test is based on well-established scientific principles evolved by more than 25 years of experimental work prior to 1917, when the co-operative work of tuberculosis eradication started. It is among the most dependable tests for disease. Yet, by reason of its wide use as a basis for detecting and condemning tuberculous livestock, the test is sometimes questioned as to its dependability, and uninformed critics have publicly made many unfounded statements concerning its use. The following well-established facts are, therefore, presented for the public's information.

Tuberculin Is Harmless. Mohler[5] in a recent press release points out the foregoing and also the harmlessness of tuberculin and its reliability as follows: Tuberculin is a product prepared by sterilizing, filtering, and concentrating the liquid upon which tubercle bacilli have been allowed to grow. It was first made by the great scientist, Robert Koch, who found, in 1890, that it caused a rise in temperature when injected into the tissues of a tuberculous animal, but that it had no effect upon animals free from tuberculosis. Tuberculin contains the sterile product of the growth of the germs, but not the germs themselves, and when properly used it can have no possible injurious effect. Furthermore, the tuberculin that is commonly used in testing livestock in the United States is made under Government supervision, which assures its purity and potency.

Although tuberculin is the means by which symptoms of tuberculosis may be observed in animals, an accurate diagnosis depends likewise upon ability to observe and interpret the results of the test. The Department of Agriculture requires that the official testing of livestock for tuberculosis be performed by trained veterinarians who have demonstrated their ability to make the test properly. Of the three official methods of tuberculin testing—the subcutaneous, intradermic, and ophthalmic—the one most commonly used is the intradermic by reason of its greater suitability for testing under farm and ranch conditions. In the intradermic test, the tuberculin is injected into the skin and the reaction, in the case of a diseased animal, consists of a swelling at the point of injection.

Retesting Shows Efficiency of Method. The results obtained thus far in systematic tuberculin testing show the effectiveness of this valuable means for detecting tuberculous animals. During the last 12 years more than 1,500,000 tuberculous cattle have been removed from herds in the United States. As a result of this work, more than 168,000 herds are now established as fully accredited, and more than 2,000,000 additional herds, including those tested in area work, have been freed of tuberculosis. Even in badly infected herds, continued testing has detected the tuberculous animals, and in a few years has established such herds on a sound, tuberculosis-free basis. A survey covering 24,550 herds, containing 571,000 cattle, shows that the first two tests remove most of the reactors. In more than 97% of the herds, the greatest number of tests needed to indicate freedom from the disease was four. Continued testing is advised as a precautionary measure. The same method has eradicated bovine tuberculosis from large areas, resutling in the establishment of nearly 700 counties, including two entire states—North Carolina and Maine—as modified accredited areas. Results of retesting in over 100 such areas indicate a high degree of testing efficiency.

Meat Inspection Records Reveal Less Tuberculosis. To persons who may still question the reliability of tuberculin tests conducted in the systematic manner described, the records of the Federal meat-inspection service give evidence of the most conclusive kind. This service involves the veterinary examination of approximately 10,000,000 cattle and upwards of 40,000,000 swine annually, in addition to the slaughter of other food animals which are not commonly infected with tuberculosis. During the progress of systematic tuberculosis eradication there has been a general decline in

[5] Mohler, John R.; The Reliability of the Tuberculin Test; publication of U. S. Department of Agriculture, Bureau of Animal Industry.

the number of tuberculous animals slaughtered in the regular kill and also in the extent of the disease in affected carcasses. The reduction is especially noticeable in cattle, against which the campaign to eradicate tuberculosis has been principally directed.

Dehorning, Castrating, Branding and Marking Beef Cattle

Black and Parr[6] point out, in a recent bulletin that horns and choice beef carcasses, as a rule, do not go together. Feeder cattle having horns do not feed out so well as dehorned cattle. Badly bruised carcasses are usually found in shipments of horned cattle. Bruises detract greatly from the appearance of the carcasses, thus lowering their sale value. Besides the damage done to meat, the hide is frequently damaged. Dehorned cattle usually bring from 25 to 75 cents a hundredweight more than horned cattle of similar quality and condition.

Castration improves the beef animal from a meat standpoint, causing greater development of the regions from which the valuable cuts are taken. Losses from castration of bulls and spaying of heifers are almost negligible if the operation is performed by an experienced person. Flies are the greatest source of infection of wounds, hence the importance of castrating, spaying, and dehorning in cool weather.

Branding is necessary as a means of identification in many of the range-cattle-production areas. The brand should be small, however, and placed where it can be seen readily.

Dehorning, castrating, branding, marking, and vaccinating may be performed most satisfactorily and with greatest speed when a well-constructed chute is provided for holding the animal.

Investigations of the Blood of Chickens

It is desirable that further and more extended contributions be made to the physiology of poultry. A rather careful review of the literature shows that much has already been done along some lines, along other lines there is a lack of data which may be used as a basis of normal physiology. The problems of husbandry have been given a great deal of attention and much literature is at hand for review along this line. A considerable research deals with the metabolism of calcium and phosphorus and conditions resultant from feeding; the effect of irradiation and the use of cod liver oil have been extensively shown to influence the metabolism of these two salts. There is still a great deal to be done in order to clarify the status of the constituents of the blood stream.

To the end that information as to the foregoing may be worked out, Hayden[7] undertook a study of the physiology of the blood of chickens. His conclusions are:

1. The average blood sugar reading of 139.1 is high when compared with other animals and indicates a marked difference in the carbohydrate metabolism of chickens.
2. The average urea reading of 5.38 mg. is lower than the average obtained from other animals.
3. The average uric acid reading of 2.47 mg. is much higher than that obtained from any of the other domestic animals.
4. Preformed creatinin, total non-protein nitrogen, calcium and chlorides gave average readings within the range obtained from other animals.
5. Inorganic phosphates gave an average reading somewhat lower than other animals. The cow gives an average reading of 5.70 mg. This is 174 mg. higher than the reading obtained from these chickens.
6. The hemoglobin percentage and the erythrocyte count of 2,825,777 compare favorably with the figures of other authors. The total white cell count of 38,888 is higher than that of Burnett and Blain, but is not as high as that of the exceptional chicken reported by Blain.
7. Our differential count shows quite a variation from that of Burnett and Blain. The technic of Sabin and the results of Blain make a revision of the total and dif-

[6] Black, W. H., and V. V. Parr; Dehorning, Castrating, Branding and Marking Beef Cattle; U. S. Department of Agriculture Farmers' Bulletin No. 1600.

[7] Hayden, C. E.; The Physiology of the Blood of Chickens; Annual Report, New York State Veterinary College at Cornell University, 1927-1928.

ferential white blood counts of chickens imperative.

8. A refractive index average of 1,3430 and a protein percentage of 4.259 for the group of white leghorns studied indicates a low protein content in the blood of chickens.

Recent Theories as to the Etiology of Milk Fever

In 1925, Widmark and Carlens proposed a theory of a deficiency of blood sugar or a hypoglycemia, basing their view upon experimental evidence in which cows treated with insulin apparently presented some symptoms analogous to those found in milk fever, and that intravenous injections of 3 to 5 liters of 5% glucose solutions brought about apparent recovery. The udder was likewise inflated to guard against a relapse.

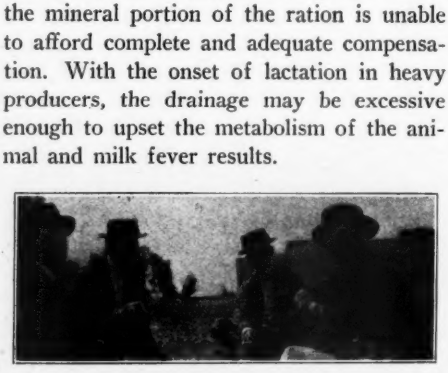
The soundness or unsoundness of the theory is dependent upon some method by which the glucose and lactose in the blood might be differentiated. Folin, Svedberg and Hayden show that there is, on the average, an increased amount of glucose in the blood of milk fever patients. Little and Wright, Mossu, Schlotthauer and others confirm these findings and there is therefore an increasing tendency to refuse the theory that hypoglycemia is a causative factor in milk fever.

Fish[8] also inclines to this view in an examination of the literature on the subject, and a record of original work. Dryerre and Greig in 1925, advanced the theory that milk fever is due to a parathyroid deficiency. Little and Wright subsequently, but in the same year, advanced the theory that milk fever is primarily due to a calcium deficiency. This was confirmed in the laboratory of the author and at a later date by Dryerre and Greig. The author (Fish) also noted a deficiency in blood phosphates in milk fever patients and the known intimate relationship between calcium and phosphates in many of the body processes suggested to him that a deficiency of phosphorus as well as calcium may be concerned in milk fever. He also noted that after inflation of the udder the phosphorus returned more rapidly to the normal amount than did the calcium and that convalescence coincided more nearly with the return of a normal phosphorus balance than it did with a return of a normal calcium balance. This was observed also by Sjollema at about the same time but independently.

The author concludes:

Are the number of milk fever cases increasing? The answer will undoubtedly vary in different sections of the country. The answer will depend also upon the number of high grade animals kept in the herds. The records of the ambulatory clinic of the New York State Veterinary College, covering a period of twenty years, shows that more cases of milk fever were attended during the last five years than during the whole fifteen-year period preceding. During the five-year period, 153 cases were treated, as against 146 cases for the previous fifteen-year period.

The tendency is to weed out the scrubs and "boarders" and cherish the high producers. The latter are encouraged with high rations to produce the largest possible amount of milk and with this procedure the tendency toward milk fever increases. Although the blood constituents may show a normal balance, there is evidence to indicate a drain on the body tissues of their calcium and phosphate constituents, against which the mineral portion of the ration is unable to afford complete and adequate compensation. With the onset of lactation in heavy producers, the drainage may be excessive enough to upset the metabolism of the animal and milk fever results.



At the Des Moines Meeting of the A. V. M. A.

[8] Fish, Pierre A.; Recent Progress in Our Knowledge of Milk Fever; Journal of the A. V. M. A., Vol. 28, No. 6, December 1929.

The Economic Side of Tuberculosis Eradication[9]

Some persons have held the opinions that the testing and subsequent condemnation of large numbers of dairy animals would adversely affect the milk supply of the country; the facts, however, are to the contrary.

According to census figures the total production of milk increased from 7,805,143,792 gallons in 1919 to 9,198,303,635 gallons in 1924. The per capita consumption of milk in the United States in 1917, as estimated in the Bureau of Agricultural Economics, United States Department of Agriculture, was 42.4 gallons. In 1926 it had risen to 55.3 gallons, which is the latest official estimate available.

From a purely business standpoint tuberculin testing has been a profitable investment for the livestock industry, since the cost of the test is greatly outweighed by increased value of animals known to be free from tuberculosis. Owners of accredited herds commonly estimate that their animals are worth from $10 to $50 a head more by reason of their known freedom from tuberculosis. The exact figure depends largely on the kind of cattle in question.

More than 1,500 cities and towns in the United States require that milk sold in such localities shall be from tuberculin tested cattle, and 555 others require either the test or pasteurization of the milk.

City milk ordinances containing tuberculin-test requirements bar the sale of unsafe milk and increase the demand for the product of tuberculin-tested cows.

The interstate shipment of cattle from tuberculosis-free areas has become an extensive business, average monthly shipments being about 45,000 head, intended principally for dairy and breeding purposes.

The postponement of tuberculin testing generally causes losses greater than the income obtained from cattle that prove later to be tuberculous.

When it is recalled that pork production in the United States exceed that of all other kinds of meat combined, the health of swine warrants close consideration.

Tuberculosis of poultry is the cause of serious economic loss in the form of reduced egg production, unthriftiness of fowls and their death. Data from 28 states indicate that about 7% of poultry flocks are infected to some extent by tuberculosis.

Since livestock serves as the principal balance wheel in the agriculture of the United States by consuming a large proportion of our crop and forage resources, the health of such livestock is essential to our highest agricultural prosperity.

[9] Mohler, John R.; Economic Benefits of Eradicating Tuberculosis from Livestock; U. S. Department of Agriculture, Miscellaneous Publication No. 66. Selected paragraphs only.

Anemia in Suckling Pigs[10]

Success with swine begins in preventing anemia in young pigs. New-born litters can escape this danger only when they eat some extra iron salt. If they do not get this from the soil, they should be supplied artificially.

Every year there is a loss of about 35% of pigs in the suckling stage. Anemia is responsible for a part of this loss.

Anemia is most common from three to six weeks of age. If the young survive this period and begin to eat foods other than the sow's milk, the danger from anemia from improper food is passed. If an anemia develops later, it is due to other causes than dietary ones.

The young pig has only a narrow margin of safety against the danger of anemia. This is due to the fact that sow's milk is an extremely poor blood builder. This is especially true if the sow and young are under housed and unnatural conditions.

The favorable effect of the out-of-doors in preventing anemia lies in the fact that the pig roots in the soil, thereby getting substances which supplement the sow's milk such as more iron and more copper.

Feeding iron and copper salts to sows does not prevent the anemia in the young. The pigs from sows so fed come down with the anemia just as rapidly as the young from

[10] Hart, E. B., C. A. Elvehjem, H. Steenbock, G. Bohstedt and J. M. Fargo; Anemia in Suckling Pigs; University of Wisconsin Agricultural Experiment Station Bulletin 409, September 1929.

sows receiving only yellow corn, skimmed milk and common salt.

The only way to prevent anemia in young pigs in the suckling stage is to supplement the sow's milk with an iron salt carrying impurities of copper.

The best method is to feed each pig seprately from a solution made of 3.6 ounces of iron sulfate (ferric) dissolved in 5 quarts of water. Iron sulfate may be bought at any drug store. One teaspoon of this solution a day, fed as a drench, gives enough iron to prevent anemia.

Artificial Insemination

Professor Iwanow[11] commenced research into methods of artificial insemination of animals thirty years ago at the Institute of Experimental Medicine in St. Petersburg. His work was interrupted in 1914 by the World War and the Revolution following in Russia, but in 1923 the work was resumed and has been continued up until the present time, and in a recent publication he gives a most interesting account of his findings and their scientific application. According to this report, Professor Iwanow was first to establish the fact that artificial insemination in mammals is possible with spermatozoids preserved in an artificial medium, that is with the testicular secretion with no admixture of the secretions of the auxiliary sexual glands. He was also able to demonstrate that spermatozoids could remain active for a long time and preserve their fertilizing power in a testicle detached from an animal or even taken from a slaughtered animal.

This discovery was of great importance in experiments on hybridization, making possible, for example, experiments in crossing the wild ram (*Ovis poli*) with the common sheep. This animal is so wild and so agile and lives in such inaccessible mountain fastnesses that it could not be captured alive. The method has a practical application, also in the case of sudden death of a valuable sire (not from infection) and for sires that become too heavy and inactive for natural coitus and must be sent to slaughter.

The method of insemination with the "artificial sperm," that is spermatozoa in normal saline solution, is used on a large scale in laboratory practice, particularly in animals where the natural sperm would be difficult to obtain, as rats, mice and other small laboratory animals.

Artificial insemination permitted the experimental control of the influence exercised on the progeny by the spermatozoids subjected to the action of this or that agent; it opened the road for practicing on a large scale cross-breeding of the species which do not interbreed in natural conditions by reason of differences in height, weight, etc. With appropriate technic one could obtain sperm in sufficient quantities. It has become possible to study in detail the chemical composition and the physiological state of the seminal liquid of different animals—a thing up to the present absolutely unknown—and to ascertain the influence of this or that factor on the quantity or quality of sperm. It has become possible to study equally in detail the mechanism (up to the present unknown) of the secretion of sperm in mammals, etc. If the technic conditions permitted, insemination of 5 to 10 females with the sperm obtained from one male without diminishing the percentage of conception; if it were proved that artificial insemination was not injurious to the health of the mother or of the progeny; if the latter were found afterwards quite normal as far as vitality, reproductive faculty and working ability were concerned; if the expenses for the installation necessary for practicing artificial insemination were compensated by the advantages obtained, this method certainly could play a very important part in the utilization of the valuable sires and dams and the improvement on a large scale of the races of domestic animals. This is of paramount importance for the countries which suffer from the lack of blood stock, as always was the case with Russia.

[11] Iwanow, Prof. E. J.; Artificial Insemination of Mammals, Scientific and Zootechnical Method; Translation by Henry Fox (Kharkov); The Veterinary Record, London; Vol. 10, No. 2, January 11, 1930.

Artificial insemination must, we believe, be of help not only in combating sterility, but in serving as a prophylactic method of unique efficiency in fighting diseases transmitted through the genital organs (dourine, infectious abortion, infectious vaginitis, etc.).

If it were possible to preserve spermatozoids in the active state and capable of fertilization in the natural sperm during two or three days, the transportation of sperm for long distances would become feasible. The solution of this problem has an enormous importance for the organization of reproduction in domestic animals. It would simplify it, would diminish the running expenses and would increase the returns. The introduction of artificial insemination in common practice would place it under the control of the microscope, taking it out of the hands of the incompetent person (herdsman, cowman, etc.) and placing it under the control of veterinary surgeons and zootechnicians. In order to solve all these problems and cast the light on its various possibilities, it was necessary to conduct a preparatory experimental work; only after this was accomplished, would the practical application become possible.

Those responsible for the administration of the state studs in Russia had become interested in these questions and gave us the opportunity of organizing a small laboratory and an experimental station where we devised a technic of artificial insemination applicable not only in horses, but in all domestic animals and where, during five years, we conducted experiments and made observations. This preparatory experimental work (in the course of which, besides laboratory animals, more than 550 horses were subjected to observation and experiments) enables us to form the following conclusions:

Our technic, as applied in a great number of various animals, has enabled us to obtain seminal liquid in toto. The procedure employed for its collection and injection was very simple and offered (if all technical instructions were observed) no danger to the health of the female. The sperm collected at one time from the horse, the bull, the boar, was sufficient on an average for inseminating 10 or 15 females. A stallion produced on average 100 c.c. of sperm and sometimes 300 c.c. and more.

The percentage of conception, far from being inferior to that observed after natural copulation, generally speaking, was superior; with the stud horses, if the condition of the females was normal and the reproductive power of the male high, the percentage was from 75 per cent to 80 per cent.

Pregnancy pursued its normal course, the progeny did not differ in any way from that brought forth after natural copulation; puberty arrived at normal time and the capacity for work was beyond doubt.

Injection in the cervix of the uterus gave a larger percentage of conceptions than insemination in the vagina. Artificial insemination was practiced only at a very characteristic period of heat. Insemination which was not made during this period led to conception only in exceptional cases. It is necessary to inject freshly collected sperm because the spermatozoids of the horse usually preserve their fertilizing power in the secretions of the auxiliary sexual glands for two to four hours only. Contrary to what was supposed (Professor Hoffman and others) it is useless to maintain the sperm at the bodily temperature (36° to 37° C.); the spermatozoids of the natural sperm die at this temperature more rapidly than at a temperature of 12° to 18° C. (53.6° F. to 64.4° F.), or even at 2° C. (35.6° F.). The use of the sperm diluted with a saline solution gave certain results, but the percentage of conceptions was much lower than with the undiluted sperm.

It was only after this experimental work was carried out that the method of artificial insemination was proposed for use in the state and private stud farms and at the breeding stations. A laboratory for this special purpose was established with a branch in the renowned Zoological Park "Ascania Nova." This laboratory had for its aim not only the scientific study of the biology of reproduction but also the preparation of spe-

cialists for the practical application of this method in the field.

From 1910 to 1914 about 400 veterinary surgeons passed through our laboratory; out of those about 100 applied our method in the country districts. Artificial insemination was introduced at the breeding stations as an experiment; veterinary surgeons were not officially instructed as to the technic of its application; the work lacked unity; the mistakes and the useless complications sometimes introduced into the technic could but negatively contribute towards success. Nevertheless, where the work was conducted in a regular fashion, the percentage of positive results approached the figures indicated above. In certain studs (Provalsky, Kœnig and others) it went up to 90 per cent. During this period over 7,000 horses at least were subjected to artificial insemination. The Great War at first, then the Revolution and the Civil War which followed, had retarded the progress of this work for nearly 10 years. It was only in 1923 that it was possible to resume the interrupted work. Artificial insemination alleviated a pressing need (caused by the dearth of valuable pedigree sires) for the improvement of live stock. It was resolved in the first instance to increase the activities at the breeding stations. The progress in the practical application of this method in Russia is illustrated by the following official figures:

In 1923, the number of mares inseminated was about 1,000.

In 1924, the number of mares inseminated was about 2,500.

In 1925, the number of mares inseminated was about 8,500.

In 1926, the number of mares inseminated was about 18,000.

In 1927, the number of mares inseminated was about 44,000.

In 1928, the number of mares inseminated was about 70,000.

The figure for 1929 is not known yet, but it has been estimated that 250,000 mares will be inseminated. In 1930, 714 breeding stations will be at work.

At the breeding stations the work is being done by veterinary surgeons who receive a special training.

Apart from horses, we have utilized the method of artificial insemination for sheep and cattle, but on a lesser scale. This depends on the brevity of the period of heat in these animals and the difficulty of transporting them to the breeding stations. At the big state farms and collective farms, which have thousands of head of cattle and sheep, this method is receiving vast application. The work with the sheep has already been commenced on a large scale. Last year artificial insemination was practiced on five thousand sheep in Northern Caucasus, our aim being to obtain a cross between the indigenous sheep with coarse wool and the merino-sheep; despite certain unfavorable local conditions, the results obtained were quite satisfactory from the point of view of number and quality of the progeny.

Artificial insemination in sows is very simple; quantity and quality of the progeny do not differ in any way from others brought forth by natural insemination. Artificial insemination presents a particular interest and notable economic advantages if applied to the fur-bearing animals (silver foxes). Foxes are monogamous animals and at the fur farms the necessity of keeping one male for each female increases overhead charges. By artificial insemination one male fox can serve from 10 to 20 females at least. The obtaining of sperm even from very ferocious foxes offers no difficulty.

Apart from domesticated mammals, we have perfected a method for the artificial insemination of birds. The spermatozoids (obtained from the ductus deferens) either pure or diluted in saline solution, are injected in that part of the oviduct which opens into the cloaca. Artificial insemination of Queen Bees offers considerable interest not only for the selection of drones and the maintaining of the parity of the race, but it is of equal importance when obtaining a new object and especially in researches on genetics. This problem has received a definite solution in the works of the American biologist, Watson.

This method would appear to be applicable now to all species of domestic animals; it has numerous applications in all branches of animal husbandry; it allows the more effective and more efficient utilization of valuable sires, and is of help in improving breeds; it is useful in combating sterility, and is a prophylactic method in fighting against the propagation of the diseases of the generative organs. It is necessary to note the importance of this method for cross-breeding between different species of domestic animals; mules, zebroids, hybrids between cattle and the zebu, yak, auroch, bison and others. These cross-breds are of considerable interest from the standpoint of genetics and possess properties valuable for the agriculturist.

AMERICAN VETERINARIANS TOURING EUROPE

This is a part of the group of American Veterinarians led by Doctor Eichhorn who toured Europe in 1914 prior to the 10th International Veterinary Congress held in London in August of that year. The scene is at "Oud-Bussem," the finest dairy farm in Europe. Beginning in front at the reader's right, those at the table are: T. B. Harries, L. Enos Day, Wray Gill, W. Reid Blair, John F. DeVine, J. L. Hoylman, N. S. Mayo, W. B. Holmes, C. J. Marshall, E. F. Sanford (wearing the Hat), Prof. Herman S. Frenckel (Utrecht Veterinary College), J. S. Blattenberg (standing), J. M. Armstrong, R. C. Julien, Ross Huson, A. Eichhorn, F. Vos (manager, Oud-Bussem), E. B. Ackerman (top of head only), F. B. Hadley, Prof. Kroon (Utrecht Veterinary College). Doctor Eichhorn will conduct another Veterinary four of Europe next summer.

INTESTINAL INJURIES CAUSED BY SOAP-SUDS ENEMAS

Runge and Hartmann administered 0.5 per cent soap-suds enemas to sixteen rabbits and twenty men. The rabbits were killed in from one-half to three days after the administration of the enema, and the rectal mucosa was examined macroscopically and microscopically. Ulcerations and diffuse ecchymosis were found in all cases. Before the administration of the enema to men, the intestines and stools were examined carefully, especially for the presence of occult blood, and a meatless diet was prescribed for three days preceding the experiment. In one-third of the men, intestinal hemorrhages were observed within three days after the administration of the enema. The toxicity of the soap-suds enema is due to the toxicity of the soap molecule itself and not to the free alkalis that may be present in the soap solution, because the ulcerations were produced even with neutral soap solutions. The authors advise limitation of the use of the soap-suds enemas.—*Jour. A. M. A.*

During the calendar year 1929, 73,067 herds, made up of 959,219 cattle, were tuberculin tested in New York state, revealing 45,001 tuberculous animals, or 4.69 per cent. During the calendar year 1928, 70,353 herds, representing 850,177 cattle, were tested, 6.61 per cent reacting.

Seven counties in Wisconsin are quarantined for rabies. The rabies situation in the state and nation is a disgrace to our civilization.—C. A. Deadman, State Veterinarian.

The Ithaca Veterinary Conference

THE 22nd Annual Conference of the State Veterinary College, Cornell University, for Veterinarians was held at Ithaca, New York, on January 16th and 17th, 1930.

The Conference was opened by Dean P. A. Fish.

Therapeutic Value of "Fever"

An interesting resume on *Brucella abortus* was given by Dr. C. M. Carpenter of the Albany Medical College, Albany, New York. After briefly referring to the history of undulant fever as has been published by Carpenter and others in many of the leading veterinary and medical journals, the doctor gave special attention to the question of fevers. In the past, the one thought has been to get the fever down, whereas today, the tendency is to let it run its course, unless it is too high and depressing. It is regarded as a functional response. High fevers are usually associated with acute diseases and low fevers with chronic ailments.

Malarial Parasites of Limited Therapeutic Value in Syphilis

Speaking of syphilis and the theory of foreign protein, Doctor Carpenter stated that a German investigator infected a number of syphilitic patients with asexual malarial parasites and found that a percentage of the nervous type was benefited by this procedure. Nevertheless, this was associated with certain dangers, so the relief that was primarily held out for the nervous cases which lead on to paralysis and paresis, is not now nearly as hopeful as it might be.

Therapeutics of Radio Waves

By accident, it has recently been observed that short radio waves produce a fever in technicians exposed to them and so the General Electric Company is looking into the possibility of these waves having an influence on fevers and syphilis. By using rabbits for experimental purposes, since they and the higher apes are the susceptible subjects, some very interesting information has been gathered. The rabbits are infected by injecting the *Spirochaeta pallida* into testicular tissue and the organisms may be recovered throughout the body in 48 hours. The infected rabbit is placed in a bell jar and by beginning treatment on the seventh day, exposing it to controlled short waves, raising its temperature around four degrees for 20 minutes (a higher or lower requirement is governed by the Wassermann test) it was found, in some rabbits, that the disease was arrested immediately and later they failed to react to the Wassermann test and their tissue did not transmit the disease to others. If treatment was begun at the time of infection, in the majority of cases, the disease did not progress at all. It would appear from the initial work done in an experimental way, that the spirochaeta can be controlled in the human family as it is in the rabbit, that another advance in 20th century medicine bordering on the miraculous has been made.

Literature on Undulant Fever

Undulant fever was reviewed by V. A. Moore. He referred to the wealth of literature that is now available on the subject. Some of the publications that he referred to and advised studying were: A Symposium, published by the American Public Health Association; one by Johns Hopkins, published in September, 1929, and Malta Fever by Theobald Smith of the Rockefeller Institute; also Case Reports by Carpenter and Merriam. Doctor Moore failed to mention, either purposely or otherwise, "Diseases of Animals Communicable to Man," by V. A. Moore, published in the American Journal of Public Health in the February, 1927, issue. We have read this article and regard it as a fine, clear, brief statement of the facts. We particularly recommend this resume to our colleagues.

It is Doctor Moore's opinion that if Malta or undulant fever were controlled in the animal, it would lose its significance for man as there is no evidence of the disease having been transmitted from one patient to another.

Twenty per cent of the raw milk examined around Ithaca was found to be infected with *Brucella abortus,* as determined by the guinea pig test. In the case of the milk of aborting animals only, the percentage was much higher, around 40%.

Fox Raising

B. J. Errington, who expects to secure his degree from the State Veterinary College this year and who is part owner of the Pleasant Lake Fox Ranch, Pennellville, N. Y., gave an illustrated lecture on The Care of Foxes. Mr. Errington's practical and intimate knowledge of the subject made his lecture very interesting, particularly to those who have an itching to get into the fox raising business. This seems like one industry where a thoroughly capable veterinarian, with a practicable knowledge of the business, stands head and shoulders above others. Mr. Errington further explained that pelting at just the right moment is a very important thing. Pelts become lighter and sometimes poorer as the fox becomes older and a generous quota of good black males is a very essential thing in a ranch. Proper feeding, as we would naturally expect, is of great importance. The period of gestation is 51 to 53 days. Estrum lasts about three days. Most males are monogamous but can be varied. In these characteristics the fox differs more from the dog than was at first supposed.

Parasites, external and internal, but particularly internal, are the most serious menace to the fox raiser. The lung worm, the round worm and the hook worm are the commonest. All puppies are treated for round and hook worms at the age of three or four weeks, the pups being taken away from the vixens before the morning feeding and returned a few hours after worming. This can be done with safety only during the warm weather, as the vixen may move them out in the cold after they have been given back to her. The round worms are best treated by oil of chenpodium and castor oil; tetrachlorethylene is best for hook worms. The lung worm of the fox is very similar to the whip worm of the dog. Perhaps the best method of getting rid of the lung worm is to keep the foxes off the floor, that is, give them a fine wire floor raised above the regular floor, or wire cages, and treat them with a tracheal brush. This, of course, requires an expert. A knowledge of it cannot be acquired by reading.

Quiet is very essential, during the whelping season, or the vixen may kill her puppies or keep moving them about until they suffer injury. It is our guess, if anyone is in search of real practical unvarnished information, that Mr. Errington would be a good man to interview, or better still perhaps visit his ranch.

Brucella Abortus Contamination of Milk

The Elimination of *Brucella abortus* from Milk by H. L. Gilman was indeed an interesting discussion of this live subject. From Doctor Gilman's investigation it is evident that *Br. abortus* may be spread from quarter to quarter, but there is no evidence of its being passed from cow to cow by the milk. Viewed both as a public health and an economic problem, *Brucella abortus* is a serious menace. About 30% of all infected cows harbor *Br. abortus* in their udders. Doctor Gilman is particularly interested in determining, if possible, the relation of the agglutination titre of milk and udder infection.

The general plan has been to collect milk from all four quarters of the udders of high blood reactors, and from a lesser number of low or non-reactors. Eight ounces of milk was collected from each quarter of the udder. These samples were immediately brought to the laboratory and centrifuged at 2400 rpm. for 20 minutes. From each centrifuged sample, 20cc of the middle milk was taken for use in the agglutination test. Most of the middle milk was then discarded. The cream and sediment were then shaken thor-

oughly with the remaining 10cc to 15cc of middle milk, and 5cc injected intra-peritoneally into each of two guinea pigs. The guinea pigs were autopsied after 5 to 6 weeks and examined for infection with *Br. abortus* by serologic and cultural methods.

Milk serum for the agglutination test was prepared in the following manner. To the 20cc of middle milk in each vial was added 3 drops of 1 to 10 dilution of rennet in cold distilled water. The vial was corked and shaken thoroughly; then allowed to stand in a water bath 10 to 15 minutes at 45° C. (113° F.) Usually by that time a good clean whey had separated out.

Formula of Results

Thirty-seven animals were examined according to the technic given; (9 of these were counted twice inasmuch as they were re-inoculated within 90 days.) The reaction of these animals ranged from positive at 1-20 up to positive at 81,920. A formula as to the animals containing any agglutinins in the milk is as follows:

1 quarters only	8
2 quarters only	5
3 quarters only	1
All quarters only	17
All quarters negative	7

Bacterium abortus recovered from milk.

1 quarter	2
2 quarters	2
3 quarters	4
All quarters	5
All quarters negative	21

The organism was therefore recovered from approximately 50% of the animals showing agglutinins in the milk of those quarters reacting at 1-80 and above.

The highest blood titre was positive at 81,920 with a partial reaction at 163,840.

The highest milk titre was 20,480, in two instances the milk titre exceeding the blood titre.

The lowest milk titre in milk from which the organism was recovered was 1-80.

The lowest blood titre in an animal from which the organism was recovered in the milk was 1-320.

The precautions in shipping material for diagnosis and the confusion that may be occasioned by not carrying out reasonable precautions was courteously explained by Dr. D. W. Baker. He stressed some of the things that every practitioner should know. For instance, if animal inoculation is a necessary part of diagnosis, then everyone should realize that the tissue should be refrigerated so as to be fresh when reaching the laboratories. If not, everyone is disappointed, sometimes including the common carrier, that may be so disappointed with the odor and the messiness of the thing not properly packed that, instead of finding its way to the laboratory, it may find its way into some furnace.

Sheep Diseases

Howard Welch had journeyed all the way from the University of Montana to tell about sheep ailments and the doctor can do it in a very entertaining way. The problem of handling bands of fifteen hundred is quite different from the handful that is found on the Eastern farm. Internal parasites, which are the bugaboo of the South, are of little concern in Montana, since during the warm weather the Montana sheep may be driven on new pasture each day and even though they are infested, others do not pick up what they leave behind. As Doctor Welch so tersely put it, "The sheep may drop eggs; the sun and the moisture hatch them and the wriggling creatures crawl up on a blade of grass, or weed stalk and S. O. S. for a host, but there is none in sight." This is of tremendous advantage and it would seem to some sheep men that the Montana ranger had just about escaped all troubles when he escapes parasites. But that isn't so. Big head (edematous swelling, something we Easterners have never heard of) is a mightmare to the Westerner. To this must be added foot rot, maggots, nose flies, ticks, umbilical infection, arthritis, abortion and goitre.

Blood Chemistry and Azoturia

C. E. Hayden who is doing patient experimental research work on the constituents of blood of animals as evidenced by intestinal contribution to cause of diseases of obscure

origin made many of the old timers sit up and take notice when he hinted that the phenols given off by the intestines may have something to do with the cause of azoturia in the horse.

Pyometra

Pyometra in bitches was the subject of a discussion by H. C. Stephenson. The doctor stated that 9% of the genital ailments of bitches brought to the college clinic is pyometra, notwithstanding there are very few breeding kennels near the college and the large majority of the bitches in Ithaca are spayed, so the probabilities are that this ailment is far more prevalent in some other places. The contents of the uterus may vary from a thick pus to a watery solution. The history is sometimes rather vague, but the history of vomiting and a poor condition, or these accompanied by a vaginal discharge in the sexually mature bitch indicates pyometra. Usually ballottement reveals the enlarged uterus. If there is considerable pus in the uterus, it will lie on the floor of the abdomen and usually the bifurcations may be outlined. At other times, it may be necessary to do an exploratory laparatomy. Treatment depends on whether the cervix is open or not. If open repeated irrigation until clean may temporarily or permanently relieve it. But the discharge is apt to return at subsequent estrual periods. If the cervix is closed or if an exploratory operation is made, it is best to remove the uterus and the ovaries. The horns should be tied at two places near the fundus, using silk, then sever between the ligatures. Cauterize the stump with phenol and neutralize with alcohol. All cases of pyometra with the cervix closed must be regarded as serious.

Dr. T. H. Ferguson, President of the A. V. M. A. spoke on Cattle Diseases. The doctor is thoroughly familiar with cattle practice, but we will refrain from reporting his talk for two reasons.

One is that as President of the A. V. M. A. he is invited to speak at many, many places, and it is quite natural he will need to use some of his material over and over.

It is also entirely probable that at some meetings the doctor has already referred to the subjects he discussed at this conference. But for those who have not heard him, we will leave the treat for them to hear him personally, so as not to deceive by attempting to do justice to the attractive and practical way the doctor can tell it.

Mastitis

The subject of Mastitis was handled by D. H. Udall. He reviewed the extent and the importance of this plague and gave some very interesting statistics that had been gathered in foreign countries. Opinion seems quite general that mastitis is on the increase and that streptococci are the important factors in most cases of mastitis. Doctor Udall and F. S. Jones of Rockefeller Institute, who discussed Doctor Udall's paper, are hopeful the present status of mastitis will be untangled soon. The trend seems to be to regard mastitis as acute or chronic. The chronic sometimes shows no evidence whatever excepting streptococci in the milk, and if this proves to be so regular as to be accepted, then the procedure of detecting the streptococcus promptly and easily is an important factor. At the present time, the method of Gerbers of Leipzig, Germany, is popular. It consists of a liquid known as Thybromol. Milk is taken from each quarter and 1cc of this preparation is added to 5cc of milk. If streptococci are present the milk turns a characteristic green. It is said by those who are using this method, that it is surprising how often this test indicates infection of a quarter that shows no external evidence whatever, and associated with this is some data that shows that such animals very often gradually decline in their milk flow, a good cow becoming each year a poorer and poorer one. This subject is an important one and a thing that practitioners had better look into as perhaps an explanation of some of the heavy milkers that do not do well year after year. Doctor Jones believes that mastitis should be taken out of the realm of surgery and put into the realm of medicine where it belongs. Doctor Jones made another very significant statement, i. e., that there are two forms of hemolytic streptococci that may

cause a disturbance in the cow's udder. One is the bovine and the other is the human and that the latter and not the former is the cause of septic sore throat in humans; the cow's udder is infected with the human type, from a human case, consequently the thing to do is to detect the cow, or cows, in the herd that are carrying the human type. The doctor referred to a herd in which he had worked where many of the animals were carrying streptococci that seemed in every way to be the same as mastitis streptococci, but no evidence of infection except by laboratory test. Such cases, Doctor Jones styled as subchronic cases. Blood serum is bactericidal for most streptococci and consequently they do not live in the blood stream.

F. D. Holford, Chief Veterinarian, Bordens Farm Products Co., New York City, stated that more than 50% of the cows replaced in the Borden herds is due to udder trouble, also that about 40% of all milking cows are shy one or more quarters. Consequently, the loss from mastitis in the way of milk from one or more of the affected quarters and the replacement of others runs into millions of dollars each year.

Disease of the Perineum in Dogs

H. J. Milks discussed the diseases of the perineal region of small animals. He spoke of the prevalence of perineal abscesses which may be treated in one of several ways. Perhaps the best way is to curette them and touch with iodin. This is simpler than dissecting them out. By curretting them, keeping them clean and paying special attention to the diet, most cases do well. Tumors of the anal glands are difficult to operate on as the tissue is so friable. Here again, curretting and cauterizing seem to fit most cases best. Prolapsus of the rectum must be differentiated from intussusception of the small intestine. If recent and mild, these cases may respond to careful replacing. Otherwise it may be necessary to perform a laparotomy to return the prolapsed intestine, and a prolapsed rectum may need special surgical attention such as the operator may prefer or the case indicates. The same is true in prolapse of the vagina. Perineal hernia and pseudo-hernia must be differentiated. Also neither of these conditions should be confused with an enlarged prostate. A rather common ailment, particularly in dogs with curly tails is necrosed areas caused by pressure of the tail bone. As a rule, the best treatment for these seems to be to remove the bone that is pressing on the sore area.

Handling the Abortion Infected Herd

R. R. Birch handled the subject of "Bang Abortion Disease in Relation to Inter-Herd Transfer of Cattle," stressing the danger of the infected cow to non-reacting animals and pleading for a sensible procedure. If a man cannot or will not test and segregate, then we should teach him that his regular breeding reacting cows, everything else being equal, are probably better and safer than he could buy and he had better keep them until he decides to clean up his herd.

Re-accrediting Tuberculosis Free Herds

Hon. H. J. Henry, Assistant Commissioner of the Department of Agriculture, Albany, N. Y., explained the department's attitude toward retesting accredited herds. A year ago there was introduced into legislature a bill which became a law providing for the retesting of accredited herds at the state's expense, at such time as proper appropriation had been made for this. This year there is an item in the annual budget of $400,000 for this purpose. The commissioner explained in a courteous and satisfactory way that details would need to be worked out so that the accredited veterinarians could do this work in a manner equitable to the state, the veterinarian and the livestock owner. There are now about 80,000 accredited herds in New York state.

The meeting of the second day was followed by a banquet, and so closed perhaps the best attended conference that has as yet been held at the Cornell Veterinary College.

We also heard many words of praise for the number and quality of the subjects presented.

J. F. De Vine.

"HEALTH," SAYS U. S. VETERINARIAN, CAN NOT BE BOUGHT AS A COMMODITY

Federal Food and Drug Officials Campaign Against the Unwarranted Claims Made on Labels for Some Livestock Tonics, Regulators, Conditioners, etc.

"Health" can not be sold in bottle, box, or bag, as food or drug preparations for animals, says Dr. H. E. Moskey, veterinarian of the Food and Drug Administration, the organization of the U. S. Department of Agriculture which enforces the Federal Food and Drugs Act. Any preparations found in interstate commerce, with the word "health" used in the name or on the label in such a way as to indicate that the preparation has curative properties for ailments of animals, is in violation of the Federal Food and Drugs Act.

In December the courts rendered a judgment in favor of the Department of Agriculture in a case against a preparation called "Liquid Hog Health," in which the Government alleged that the article was misbranded. The producer of this preparation claimed that oats treated with it would cure sick hogs and stimulate the growth of backward pigs and shoats. The Food and Drug Administration proved to the satisfaction of the court that the preparation contained no ingredients capable of producing the effects claimed.

Other preparations using the word "Health" in the name are being investigated by the Food and Drug Administration. Many so-called tonics, regulators, and conditioners carry claims to the effect that they are "health-restoring." A drug preparation which has value as a remedial agent for a certain disease is not entitled to bear on the label the word "health" in such a way as to imply that the preparation is good for any and all diseases.

Some of the objectionable claims made by preparations are:

"A quick acting medicine and systematic regulator for various ailments in cows and calves."

"A money saver and milk producer."

"Prevents disease and worms."

"This poultry tonic will keep your fowls healthy and free from worms, put the hens in laying condition, and put vigor into the males."

"This tonic contains drugs useful in treating the blood and ailments of the genital organs; for cows failing to catch calf or failing to produce as they should."

"It is a splendid digestive conditioner, aiding the animals to obtain full feed value from every pound of feed you give them."

"Keeps hog vitality high, prevents spread of disease, and kills worms, keeps hogs healthy and thrifty, saves trouble of curing hog ailments."

"Helps save feed; just the thing for worms and sickness; losses stopped, hog troubles disappear."

"Turns losses into profits."

"Increases size of litter."

Words other than "health" and "health-giving" to which the Food and Drug Administration takes exception, when they are used in names to imply far-reaching curative powers, are: "vital," "life," "vigor," and "vim," in any form or spelling.

To put reliance in preparations which are claimed to have curative and health-giving properties but which do not have them, is not only a direct waste of money, but the purchaser may be inviting serious loss by the substitution of such preparations for scientific medical treatment, proper feeding, proper housing, proper ventilation, and proper sanitation.

The department will appreciate calling to its attention violations of the food and drug act by manufacturers of medicinal preparations for livestock.

OHIO STATE VETERINARY CONFERENCE

The fifth annual veterinary conference of the College of Veterinary Medicine, The Ohio State University, will be held March 19, 20 and 21, 1930. This year the program has been extended to include not only sessions in veterinary art, but three brief laboratory courses in serology, parasitology and autopsies. The sessions in veterinary art will be held during the day and opportunity will be given for those attending to present questions for discussion at each of the sessions.

The laboratory courses will be given concurrently, so that the practitioner must select, in advance, the one in which he is interested. It is arranged so that those selecting a laboratory course can attend the general sessions of the conference during the afternoon and evening.

The course in serology will consist of a brief discussion of the theoretical and practical application of the agglutination test, with especial reference to the diagnosis of bacillary white diarrhea and infectious abortion. The course in parasitology will consider the more important parasites affecting the domestic animals and various diagnostic methods. The course in autopsies will consist of lectures and demonstrations on the proper technic and general methods employed in diagnosis by this method. Practical work will be given in each of these courses to familiarize one with their practical application in the field.

The evening sessions will be a distinct departure from those of former conferences. The first evening program will consist of addresses by President George W. Rightmire of the Ohio State University, and Wayne Dinsmore, Secretary of the Horse Association of America. The second evening a program of practical business methods for veterinarians has been arranged.

The program contains the names of many nationally known experts in their specific lines of work, assuring you of an excellent and instructive program during the entire period.

Through the conference the College of Veterinary Medicine and the University hopes to reach the live stock industry of the state, employing the veterinarian as its medium of

communication. The College of Veterinary Medicne and the Ohio State University extends a cordial welcome to all veterinarians of Ohio and neighboring states to be present during the entire program. A program giving the details of the conference will be mailed on request.

RETIREMENT OF CHIEF OF VETERINARY CORPS

It is understood that Col. Wm. G. Turner, chief of the veterinary division, office of the surgeon general of the Army, soon will submit his application to be placed on the retired list of the Regular Army, after more than 30 years' service.

A great deal of constructive work, resulting

COL. R. J. STANCLIFT
Formerly Assistant Director of Veterinary Service, U. S. Army

in increased efficiency for the veterinary corps, has been accomplished during the administration of Col. Turner as head of his corps, and an exceedingly high esprit de corps prevails among the officers of this branch of the service. Col. Turner was appointed to the veterinary corps on June 3, 1916, upon its creation by the national defense act. He had served 22 years in the Quartermaster corps of the army prior to that date. He was made a lieutenant colonel on June 4, 1920, and attained his colonelcy on June 14, 1920. It is understood that Col. Turner's separation from the active rolls of the military establishment will become effective about the 1st of June.

With the prospective retirement of Col. Turner from active service, it is interesting in this connection to name the other colonels of the veterinary corps who are eligible for selection as the successor of Col. Turner in the event of his retirement. Two of them—Cols. Ray J. Stanclift, now on duty at Fort Riley, Kans., and John A. McKinnon, on duty at Fort Benning, Ga.—have previously been chief of the veterinary division, which in all probability will eliminate them from consideration. Col. Stanclift is No. 2 on the relative list of veterinary colonels, while Col. McKinnon is No. 5 on that list. The others, relative list numbers, and present station assignments are as follows: Eugene J. Cramer, No. 3, on duty at Fort Bliss, Texas; Wm. P. Hill, No. 4, Fort Benning, Ga.; Wm. A. Sproule, No. 6, Fort Jay, N. Y.; Walter Frase, No. 7, 1st corps area headquarters; Andrew E. Donovan, No. 8, Army base, Boston, Mass., and Burt English, No. 9, Fort Sill, Okla.—*Army and Navy Register*, 1-25-30.

Note.—A slight inaccuracy occurs in the foregoing Col. Stanclift, at that time a Lieutenant-Colonel, was assistant director of the veterinary service,—a medical officer being chief.

COL. JOHN A. McKINNON
Formerly Director of Veterinary Service, U. S. Army